Illiana Expressway:

Socio-Economic Impacts of Alternative Alignments and A Description of the Methodology Employed

Prepared for
Illinois Department of Transportation

ACG: The al Chalabi Group, Ltd.
in association with Parsons Brinckerhoff, Inc.

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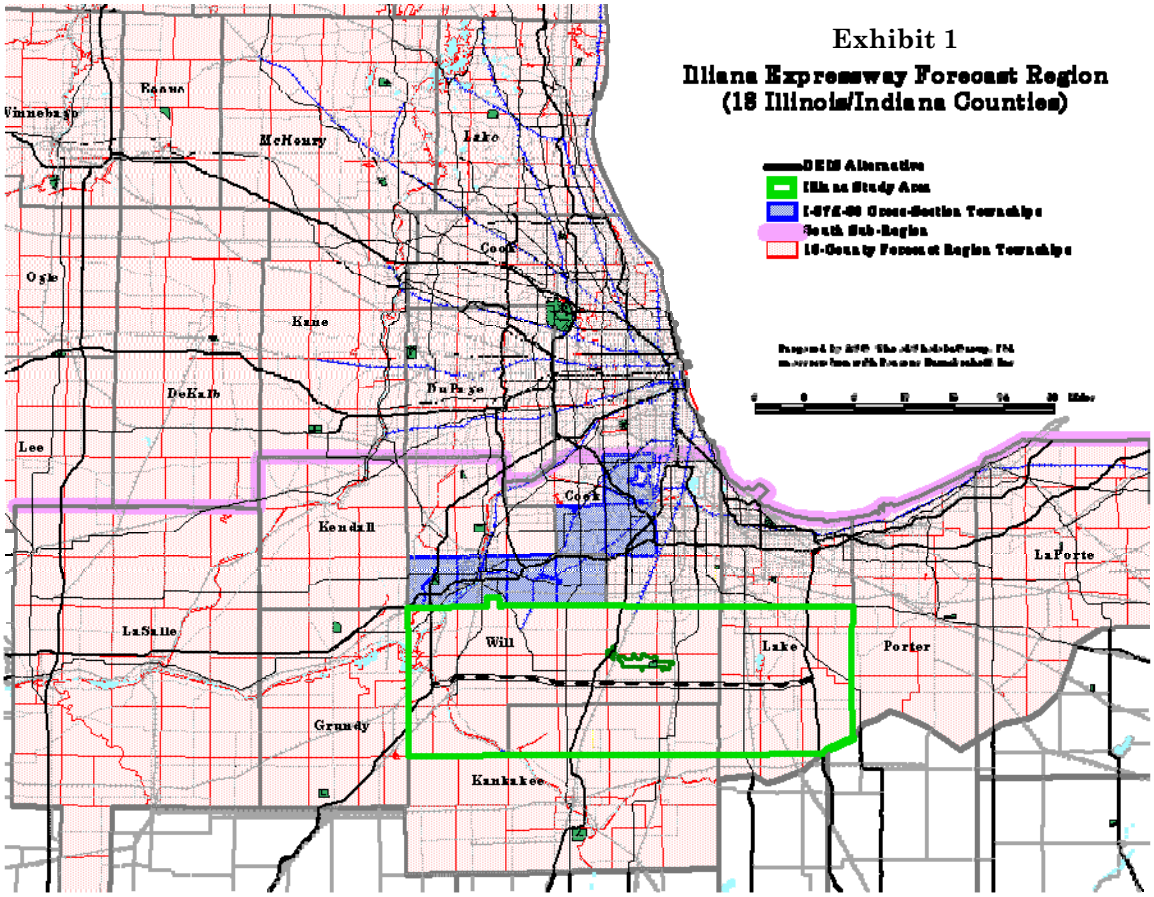
I. Introduction

A. Purpose of the Report

The purpose of this report is to identify the socio-economic impacts of the alternative alignments of the proposed Illiana Expressway; and to describe the methodology used in generating these impacts. The Illiana Expressway Tier 1 EIS Expressway Study is being conducted for the Illinois Department of Transportation by a team headed by Parsons Brinckerhoff, Inc. (PB). ACG: The al Chalabi Group, Ltd. (ACG) is a member of the PB team and is responsible for the identification and description of the socio-economic impacts of the alternative alignments.

B. Description of the Study/Impact Area

The Illiana Expressway Corridor is located in Lake County, Indiana, and Will, and Kankakee Counties, Illinois. However, its impact area comprises the South Sub-region of the Extended Chicago Region, extending from La Porte and Porter Counties, Indiana, on the east, to Grundy, Kendall and LaSalle Counties, Illinois, on the west, and into Southern Cook County, Illinois on the north (see following Exhibit #1).



C. Methodology Overview

The general method employed, in this analysis, recognizes the fact that accessibility influences locational decisions which, in turn, influence accessibility. Improving access to sites within the alternative corridors and beyond increases the potential development of these sites, development that, otherwise, may have occurred elsewhere.

This study uses as its baseline (2010-2040) forecast, the Market-Driven No-Build forecasts prepared by ACG and whose methodology and results were described, previously, in the report, Historic and Forecasted Growth of Employment and Population in the Extended Region of Chicago: Market-Driven versus Policy-Based Socio-Economic Forecasts (2010-2040), submitted in February, 2012. The impacts described in this current study are based on: travel times provided by PB for each alternative; and changes in accessibility measured by ACG. Socio-economic impacts are described, primarily, in terms of population and jobs affected.

II. Baseline Forecasts (Summary)

A. Baseline Forecast Methodology

The baseline forecasts reflect 2040 conditions assuming no Illiana Expressway. The baseline forecasts, however, do assume the implementation of other transportation projects included in the approved, financially-constrained, transportation plans and programs for the region.

The Illiana Expressway Corridor study is among several recently-completed or in-progress transportation projects that have used a Market-Driven socio-economic forecast developed by ACG: The al Chalabi Group, Ltd. ACG's forecast methodology is approximately that which normally had been used by the regional planning agency, the Chicago Metropolitan Agency for Planning (CMAP), and its predecessor, the Northeastern Illinois Planning Commission (NIPC). This was true until the completion of CMAP's comprehensive plan, Go to 2040: Comprehensive Regional Plan, in 2010. The 2040 CMAP plan adopts a strict Policy-Based approach to forecasting.

The ACG Market-Driven forecasts were prepared in close collaboration with CMAP. Over a period of approximately one year, ACG: The al Chalabi Group, Ltd. conferred with the Chicago Metropolitan Agency for Planning in its development of a Market-Driven socio-economic forecast. Because it was intended for use in multiple projects, forecasts were prepared for the extended (18-County) Chicago Metropolitan Area. This Market-Driven forecast accepts and incorporates the 2040 total forecasts for the CMAP region; but, it differs in the distribution of those forecasts. The collaboration with CMAP was intended to establish the ground rules for developing an alternative, but complementary, forecast for the seven-county CMAP portion of the region. These ground rules were:

- Articulate alternative assumptions.
- Show the math.
- Produce standard outputs.

The No-Build scenario for the Illiana Expressway Corridor includes portions of the CMAP region, Kankakee County, Grundy County and Lake County, Indiana, the latter of which is part of the Northwestern Indiana Region Planning Commission (NIRPC) region. For the latter area, ACG conferred with officials and planning staff of NIRPC, who, like CMAP, had recently developed a Policy-Based regional plan. In addition, several joint meetings were held with both regional planning groups, Kankakee County, and IDOT and INDOT representatives. As part of this study, ACG updated its earlier forecasts for Kankakee County.

The following summary description of the Baseline forecasts is taken from the report, The Illiana Expressway Corridor: Historic and Forecasted Growth of Employment and Population in the Extended Region of Chicago: Market-Driven versus Policy-Based Socio-Economic Forecasts (2010-2040), No-Build Illiana Expressway Scenario.

B. Baseline (2040) Socio-Economic Forecasts

Exhibit #2 shows the total population change between 2010 and 2040 of the Market-Driven forecasts for the Illiana Expressway Corridor Study. The data is presented as change per decade per square mile, by township. The general picture is of a central city (Chicago) remaining vibrant and growing; a south portion of the region growing to levels previously experienced in the north and west sections of the metropolitan area; substantial growth, creating higher densities, at the region's edges; and an inner suburban area with moderate growth.

Exhibit #3 shows the CMAP/NIRPC Policy-Based forecast distribution of population for 2010-2040. Under this scenario, the City of Chicago, the North Shore lakefront and Northern Lake County, Indiana provide a major part of the region's growth. These areas and close-in counties (DuPage, North Cook) are allocated growth which would appear to require substantial increases in density, which, to materialize, would require considerable replacement of existing stock since many already are at mature levels. The City of Chicago grows to 3,303,768 by 2040. This increase, of 608,170 persons, is nearly double the increase of the Market-Driven forecast. There are major population increases in the close-in townships of Will, McHenry, Kane and Kendall Counties; but, growth beyond these areas is limited or contained. Exhibit #4 shows the difference in forecasts of the two population forecast alternatives.

Table #1 compares these two forecasts for 18 counties and 4 sub-county areas in the extended Chicago region.

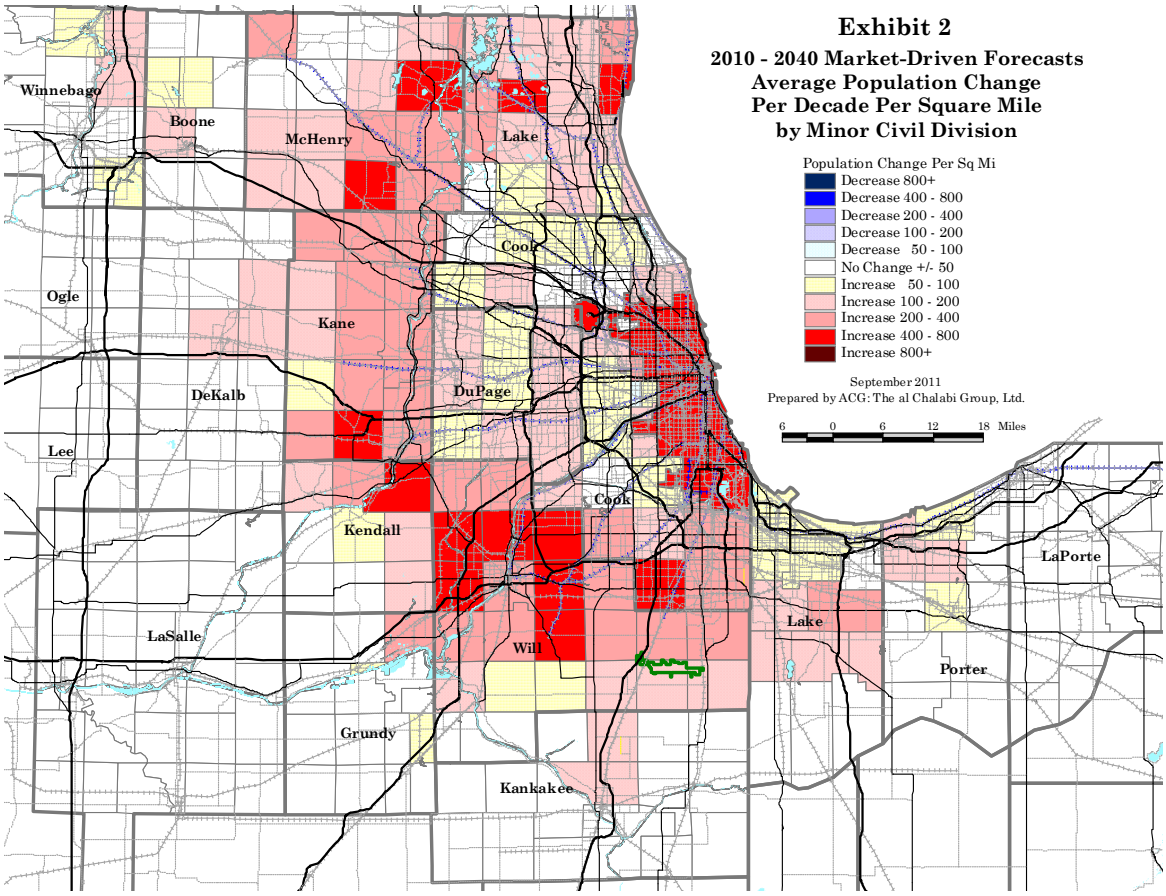


Exhibit 2
2010 - 2040 Market-Driven Forecasts
Average Population Change
Per Decade Per Square Mile
by Minor Civil Division

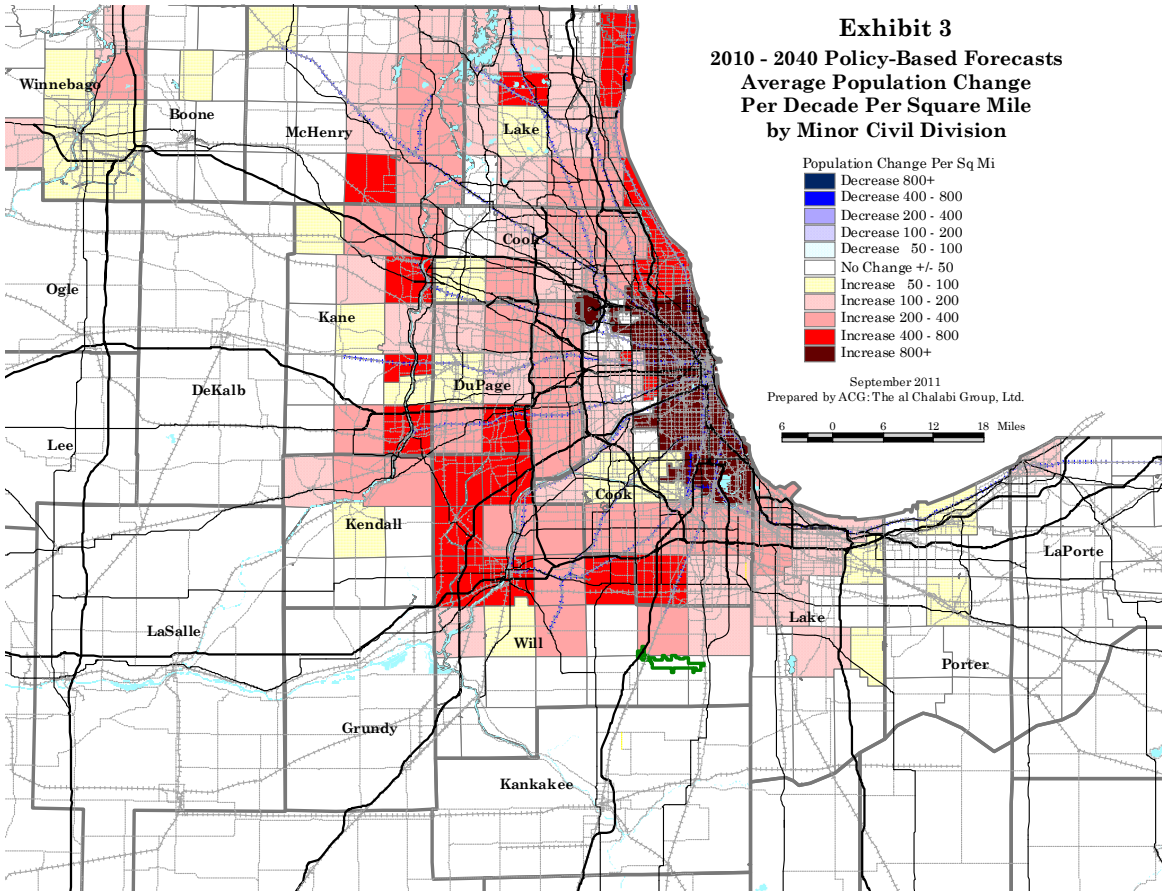


Exhibit 3
2010 - 2040 Policy-Based Forecasts
Average Population Change
Per Decade Per Square Mile
by Minor Civil Division

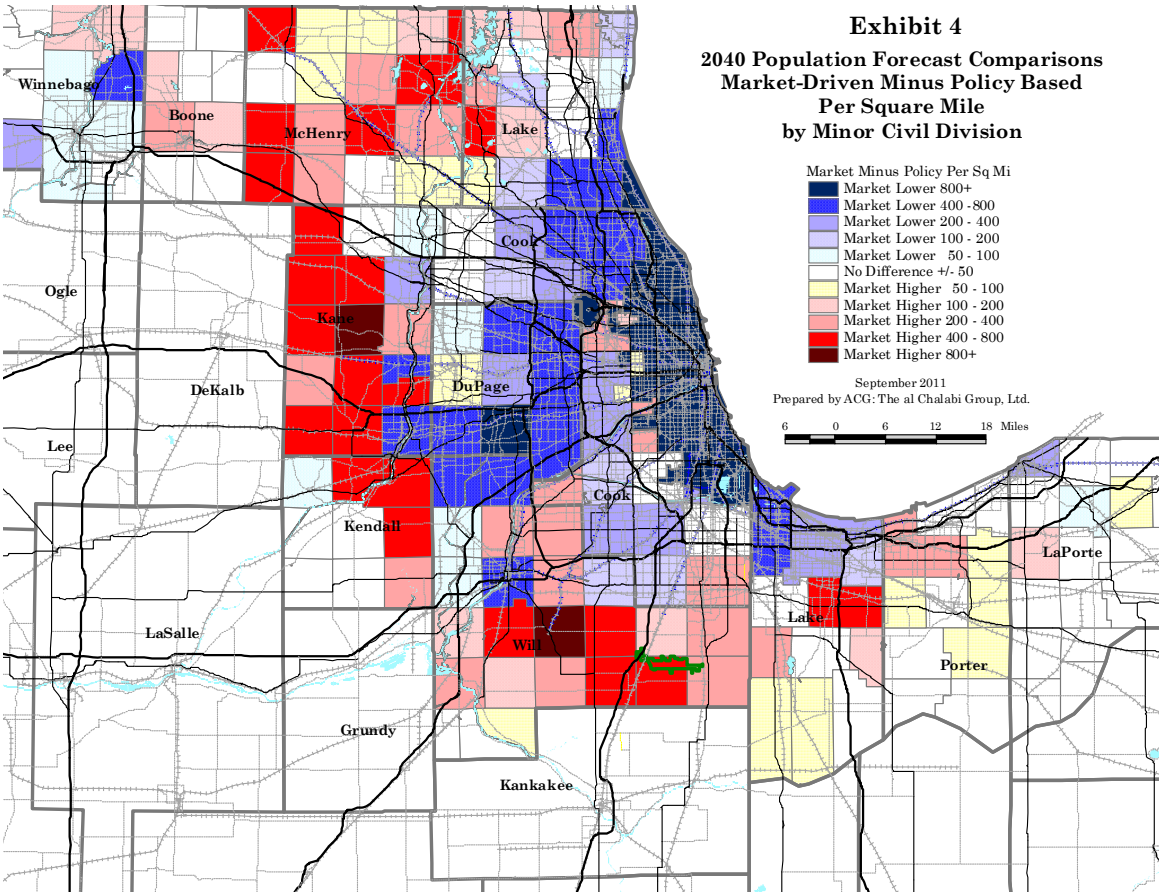
Table #1
Illiana Expressway Corridor
Forecasts for the Extended Region of Chicago
Market-Driven vs. Policy-Based (MPO) Socio-Economic Forecasts 2010 - 2040

	Final Market-Driven Population Forecasts					Final Market-Driven Employment Forecasts (BEA)					MPO* Population Forecasts		MPO* Employment Forecasts		Market-Driven Minus MPO* Population	
	2000	2010	2020	2030	2040	2000	2010	2020	2030	2040	2030	2040	2030	2040	2030	2040
County Summary: CMAP Region																
City of Chicago	2,896,014	2,695,598	2,900,000	2,950,000	3,000,000	1,748,373	1,607,833	1,630,000	1,650,000	1,715,000	3,261,464	3,303,768	1,779,852	1,537,982	(311,464)	(303,768)
Suburban Cook - North	1,047,250	1,062,657	1,087,039	1,112,134	1,125,001	834,534	824,795	874,052	901,486	921,342	1,106,516	1,257,047	839,391	793,552	5,618	(132,046)
Suburban Cook - South	789,353	793,789	865,798	934,175	973,809	344,617	334,789	388,187	437,335	468,026	936,353	985,682	369,853	352,447	(2,178)	(11,873)
Suburban Cook - West	644,124	642,631	651,635	661,564	674,800	394,079	358,303	393,271	418,509	430,386	648,459	692,700	350,757	303,653	13,105	(17,900)
Cook County	5,376,741	5,194,675	5,504,472	5,657,873	5,773,610	3,321,603	3,125,720	3,285,510	3,407,330	3,534,754	5,952,792	6,239,197	3,339,853	2,987,634	(294,919)	(465,587)
DuPage County	904,159	916,924	963,362	998,729	1,022,108	696,726	689,770	773,722	824,359	851,700	1,003,704	1,160,364	830,293	770,940	(4,975)	(138,256)
Kane County	404,119	515,266	632,678	796,695	953,423	239,975	255,778	351,782	433,261	509,567	718,464	804,249	352,207	368,496	78,231	149,174
Kendall County	54,544	114,736	168,607	224,269	262,192	n/a	29,462	50,038	74,460	94,472	n/a	207,780	n/a	73,189	n/a	54,412
Lake County	644,356	703,462	793,486	881,852	941,221	415,337	427,450	508,143	586,502	638,025	841,860	970,959	463,509	470,937	39,992	(29,738)
McHenry County	260,077	308,760	381,303	566,698	692,028	110,734	134,274	173,528	261,706	321,495	457,593	527,649	168,575	187,829	109,105	164,379
Will County	502,266	677,560	868,986	1,146,722	1,366,456	184,449	249,681	376,427	536,548	672,961	1,076,447	1,217,879	415,550	481,883	70,275	148,577
Total: Seven-County CMAP Region	**8,146,262**	**8,431,383**	**9,312,894**	**10,272,838**	**11,011,038**	**n/a**	**4,912,135**	**5,519,150**	**6,124,166**	**6,622,974**	**n/a**	**11,128,077**	**n/a**	**5,340,908**	**(2,291)**	**(117,039)**
Summary: Other Illinois Counties																
Boone	41,786	54,165	64,877	75,676	86,973	n/a	19,849	23,658	27,493	31,499	n/a	68,516	n/a	27,319	n/a	18,457
DeKalb	88,969	105,160	122,413	139,201	155,000	n/a	52,772	58,837	64,898	70,963	n/a	n/a	n/a	n/a	n/a	n/a
Grundy	37,535	50,063	61,265	72,463	83,665	n/a	21,873	26,907	31,941	36,975	n/a	n/a	n/a	n/a	n/a	n/a
Kankakee	103,833	113,449	125,632	137,817	150,000	n/a	55,231	61,820	68,411	75,000	n/a	150,000	n/a	75,000	n/a	0
LaSalle	111,509	113,924	118,178	121,928	125,686	58,303	52,676	56,658	60,643	64,414	n/a	n/a	n/a	n/a	n/a	n/a
Lee	34,590	36,031	35,274	36,411	37,548	17,958	15,381	17,932	19,091	20,150	n/a	n/a	n/a	n/a	n/a	n/a
Ogle	51,032	53,497	58,839	63,025	67,214	25,385	22,404	25,944	29,481	31,795	n/a	n/a	n/a	n/a	n/a	n/a
Winnebago	278,418	295,266	315,259	335,654	356,250	n/a	155,293	168,449	181,600	194,756	n/a	380,506	n/a	187,654	n/a	(24,256)
Total: 8 External Illinois Counties	**747,672**	**821,555**	**901,737**	**982,175**	**1,062,336**	**n/a**	**395,479**	**440,205**	**483,558**	**525,552**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
County Summary: NIRPC Region																
Lake County (IN)	484,564	496,005	537,419	584,068	625,000	242,849	229,563	255,486	283,500	309,598	504,808	625,019	n/a	282,844	79,260	(19)
LaPorte County	110,140	111,474	114,827	119,026	123,229	n/a	54,402	58,878	63,354	67,830	n/a	123,229	n/a	68,106	n/a	0
Porter County	146,798	164,343	185,303	203,933	222,563	70,218	71,768	83,634	95,500	107,060	164,582	190,768	n/a	82,131	39,351	31,795
Total: Three-County NIRPC Region	**741,502**	**771,822**	**837,549**	**907,027**	**970,792**	**n/a**	**355,733**	**397,998**	**442,354**	**484,488**	**n/a**	**939,016**	**n/a**	**433,081**	**118,611**	**31,776**
Total 8-County South Sub-Area**	**2,229,033**	**2,521,419**	**2,927,837**	**3,422,473**	**3,806,914**	**n/a**	**1,046,769**	**1,301,377**	**1,591,049**	**1,831,922**	**n/a**	**n/a**		**n/a**	**n/a**	**n/a**
Total 3-County Illiana Corridor***	**1,090,663**	**1,287,014**	**1,532,037**	**1,868,607**	**2,141,456**	**n/a**	**534,475**	**693,733**	**888,459**	**1,057,559**	**n/a**	**1,992,898**	**n/a**	**839,727**	**n/a**	**148,558**

* The MPO's, other than CMAP, are: KATS (Kankakee County); NIRPC (Lake, LaPorte, and Porter Counties, Indiana); and RMAP (Boone and Winnebago Counties).

** The 8 Counties in the South Sub-Area are: South Cook (partial county), Grundy, Kankakee, Kendall, and Will in Illinois, as well as Lake, LaPorte, and Porter in Indiana

*** The 3 Counties in the Illiana Corridor are: Will and Kankakee in Illinois and Lake in Indiana



III. Socio-Economic Impacts of the Evaluated Illiana Expressway Build Alternatives

A. Build Forecast Methodology – Overview

There are many factors influencing the distribution of household, population and employment within a metropolitan region. Among these factors are:

- Availability and cost of developable land.
- Quality of education.
- Availability and quality of other urban services, e.g. water, sewers, public safety, open space.
- Quality of the landscape, e.g.: terrain, tree coverage, scenery and waterfront.
- Accessibility considerations, especially between jobs and labor.

The introduction of new transportation facilities and/or services changes the accessibility of an area and directly impacts population, household and employment forecasts. Starting in the mid-1990's, all IDOT-sponsored studies were required to incorporate this interrelationship between transportation facilities and socio-economic and land use forecasts into the design, evaluation and assessment of their proposed projects. In

addition, IDOT has funded and encouraged regional planning and/or transportation agencies and MPO's to be cognizant of these interrelationships in the preparation of their regional forecasts. Other Midwestern state DOT's have followed IDOT's lead and adopted similar planning/evaluation approaches.

ACG: The al Chalabi Group, Ltd. has worked as a member of consultant teams in the preparation of a number of EIS's for major highway facilities which generated accessibility-sensitive socio-economic forecasts. Prior examples of IDOT-sponsored studies which examined, explicitly, the interrelationship between major transportation projects and socio-economic/land use forecasts/impacts are: the South Suburban Airport (1995); the Illinois SR53 north through Lake County (1999); the I-355 extension south to I-80, (2000) and the Prairie Parkway (2006). ACG undertook the socio-economic/land use analyses for these four projects, as well as for other projects in nearby states, including the Illiana Corridor Draft Study for INDOT and the Ohio River Bridges Project for INDOT and the Kentucky Transportation Cabinet. A number of these studies have been completed and have received favorable Records of Decision (ROD's) and have been or are in the process of being constructed.

Former ACG studies advanced the technical analysis by formulating more-precise relationships between accessibility and development, while striving to hold other factors that influence development constant. This study refined the relationship between urban development and land availability; it was determined that a Standard Logistics S-Curve could describe historic growth, "take-off" development, and maturity at the township level. And, an S-Curve describing land availability and holding capacities describes its inverse. This relationship, which recognized capacity constraints, describes the general development pattern over the period 1920-2010 for the Extended Chicago Region. This analysis, as well as the 2010-2040 No-Build forecasts, are described in detail in the aforementioned report, Historic and Forecasted Growth of Population and Employment in the Extended Region of Chicago. Table #1 from that report, (previously shown) shows the Market-Driven 2010-2040 No-Build population and employment forecasts for the region.

This current study retains the accessibility measures and the methodology for determining them that were used, previously, in the Prairie Parkway EIS. This methodology is described in the following section.

B. Measuring Accessibility

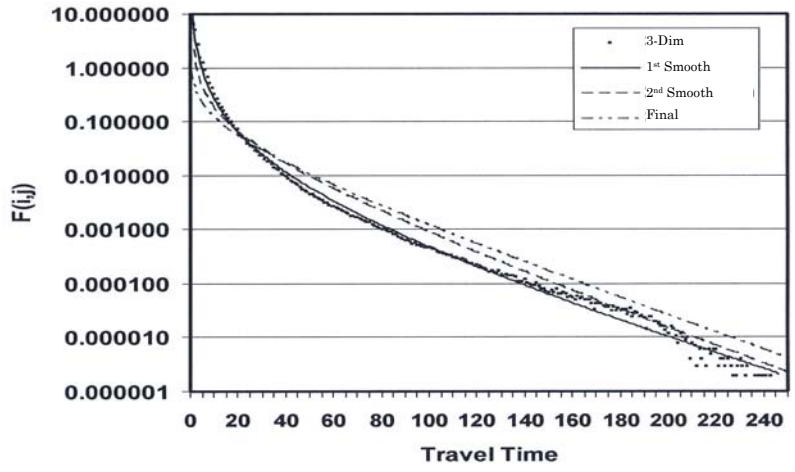
Each Transportation Analysis Zone (TAZ) has an accessibility index which measures the travel impedances between that TAZ and other TAZ's within a region. The introduction of a new transportation facility changes this accessibility. TAZ's which improve their accessibility to jobs or labor force become more attractive for residential or industrial/commercial developments, respectively. The reverse also is true. The first operational issue is to generate indexes for measuring accessibility to jobs and labor force. These generated indexes:

- have a theoretical basis
- can be calibrated using historical data
- can be forecasted using acceptable models

In selecting jobs, workers put more emphasis (weight) on jobs closer to their residences than on jobs farther away. The varying weights are the functions of the inter-zonal impedances in a gravity-type trip distribution model. This function can be calibrated from the Chicago CMSA work trip data for 2000, the latest available (for the Tier 2 study, updated data, if available, will be used). The method for calibrating this function is described in Appendix A – Travel Time Impedance Estimation.

Exhibit #5, below, shows these weights, $F_{i,j}$s, as functions of travel time. The sum product of these weights and the travel times from a given origination zone to all destinations generates an accessibility index for the origination zone for a specified transportation network. Changes in the accessibility index for a zone given two alternative transportation methods provide the basis for calculating the household or employment forecast differential of these two alternatives.

Exhibit #5: Final Weight – $F_{i,j}$s



C. Illiana Expressway Evaluated Alternatives:

The evaluation of alternative Illiana Expressway alignments was conducted in two stages. Two full-access build alternatives were evaluated and compared to the baseline (no-build) alternative. Based on these comparisons, three sketch plan alternatives also were developed. The two stages of alternative evaluation are described below:

1. **Full-Access Build Alternative** – These alternatives also are known as the Build 1 (Northern) and Build 2 (Central) alternatives.
   - Alternative Build 1 (Northern) – traverses the north-central portion of Lake and Will Counties from north of Crown Point to I-55 east of Channahon. The north alternative alignment lies north of the proposed South Suburban Airport.
   - Alternative Build 2 (Central) – traverses the south portion of Lake and Will Counties, south of the proposed airport.

2. **Sketch Plan Alternatives** – Subsequent to the analysis of the above-two alternatives, three additional sketch plan alternatives were developed. They are:

   - **Alternative A3S2** – takes a central route through Will County, skimming the northern edge of the proposed airport, but starting from a more-southern (Build 2) route through Lake County.
   - **Alternative B3** – is the same alignment as the Build 2 (Central) alternative.
   - **Alternative B4** – takes a slightly-more-southern route through Lake County, crossing the northeast tip of Kankakee County, and continuing across Will County on a route similar to Build 2.

Build socio-economic forecasts were generated, specifically, for each of the first two alternatives (Build 1 and Build 2). The Build socio-economic forecasts were generated using travel time matrixes resultant from running the transportation models with each of these two alternatives and the baseline socio-economic forecasts. Initially, these "Build" forecasts were generated by transportation sub-zones and involved all the variables required as input into the transportation models. These detailed forecasts were intended for evaluating the transportation performances of the initial alignment alternatives. The total population and total employment of these detailed forecasts were summarized by township; and these summaries provided the needed data for the indirect and cumulative impact analysis for the initial tested alignments. More detailed data from these forecasts provided the needed input for the impact analysis within five miles of the proposed interchanges.

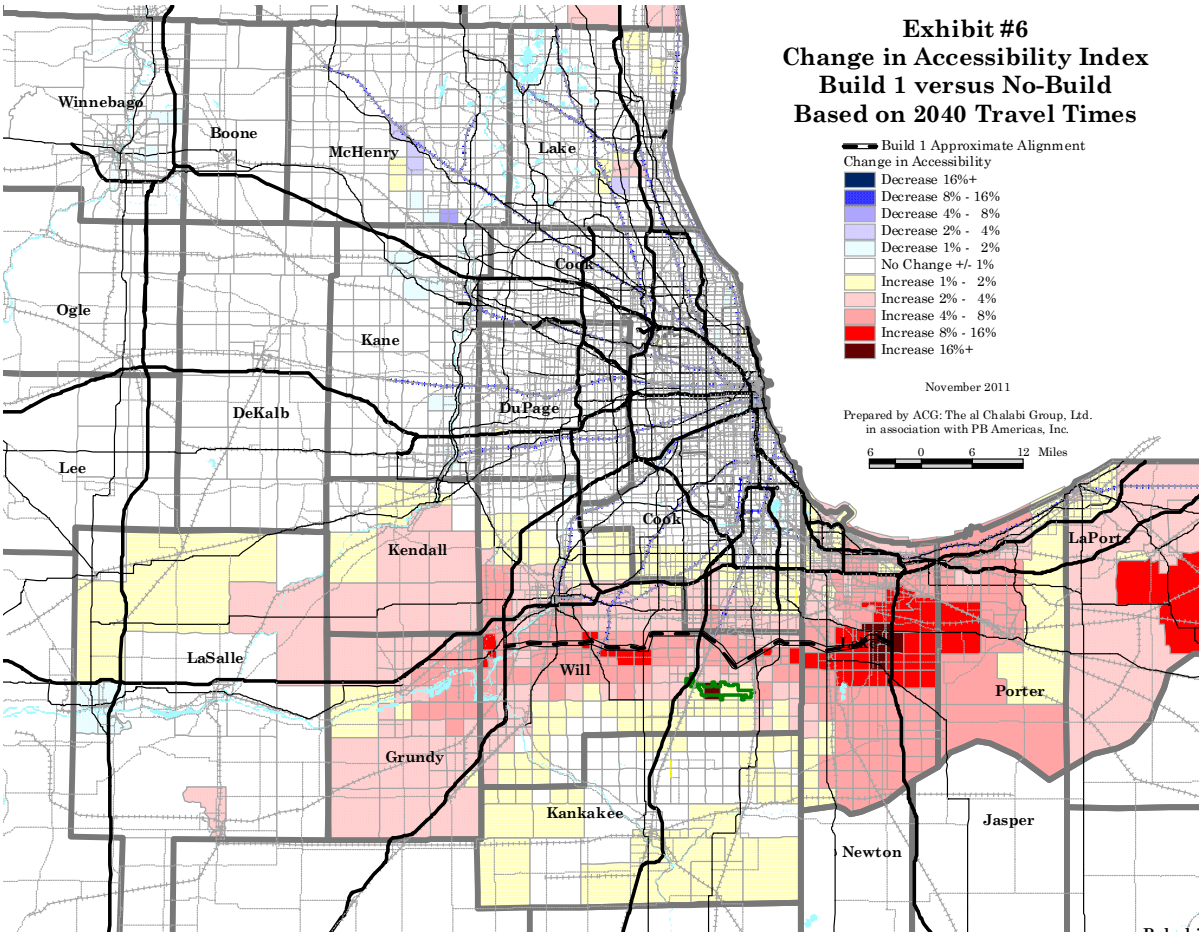
For Alternatives A3S2, B3, and B4 the results of the prior detailed forecasts, by TAZ and township, were interpolated and extrapolated to generate the needed total population and total employment, by township. Time constraints did not allow for generating new travel-time matrixes for these additional alignments. However, these additional alignments represented minor variations of the initial two alignments.

D. Changes in Accessibility – Build vs. No-Build

Each of the evaluated build alternatives was compared with the accessibility implied in the baseline alternative. Maps were prepared showing the percent change in the accessibility index between the build and the baseline alternatives for the Build 1 and Build 2 Alternatives. It should be noted that changes in accessibility are functions of the weighted changes in travel times, as described in the preceding section. In turn, changes in travel times are related to changes in congestion, which are a function of the socio-economic forecasts.

Exhibit #6 shows the changes in accessibility between the Build 1 Alternative (Northern) and the Baseline Alternative. This exhibit also shows the alignment and proposed interchanges for the Build 1 Alternative. Although the alignments of the five alternatives vary north to south, all have interchanges with the same U.S. and state routes: (I-55, IL53, US52, US45, I-57, IL50, IL1, US41, IN55 and I-65). Build 1 begins at I-55 north of the Joliet Arsenal and between the UP and BNSF Intermodal facilities. It traverses the center of Will County, north of the South Suburban Airport; and crosses into

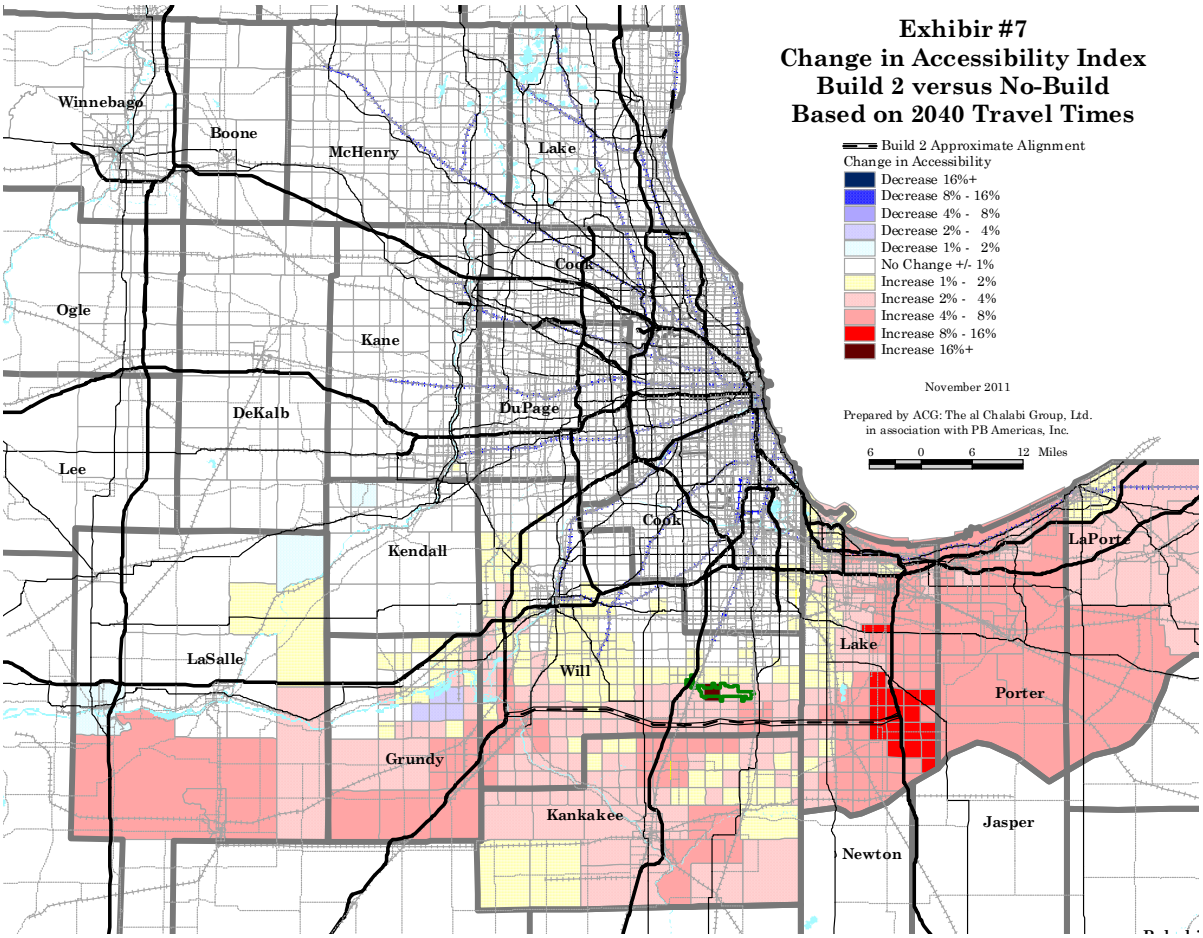
Indiana near the town of Kreitzburg, south of St. John and north of Crown Point to I-65. This route supplements the congested I-80-94 and I-65 and serves the burgeoning intermodal facilities of the southern half of the Extended Chicago Region. For the entire length of Build 1, accessibility is improved. The interchange at I-65, in particular, receives increases in accessibility of more than 16 percent at its core and 8-16 percent for many townships beyond.



Other concentrations in accessibility improvements occur west of I-55 and along U.S. Routes 52, 45 and 41. US 30 would also experience major improvements throughout Lake and Porter Counties. With the exception of a few, very small pockets (possibly the result of model noise) the balance of the region does not experience any deterioration in accessibility.

Exhibit #7 shows the changes in accessibility between the Build 2 Alternative (Central) and the Baseline (no-build) Alternative. This alignment begins at I-55 south of Midewin National Tallgrass Prairie and parallels the southern boundary of Will County. It enters Indiana midway between Lake Delacarlia and the city of Lowell; and terminates at I-65 in the center of Eagle Creek Township. The concentration of TAZ's showing improved accessibility shift south from improvements, above and (previously discussed in the B1 Alternative). Improvements are more widespread, but less concentrated. Significant improvement remains at the interchange with I-65. Greater improvements accrue to

Kankakee, LaSalle and Porter Counties. The only area that would experience deterioration in accessibility (slight) is in northeastern Grundy County. This area currently experiences considerable interruption in its transport networks by its rivers, strip mines and prairies.



It should be noted that, under either Build Alternative, there is substantial improvement in accessibility beyond the east and west termini of the facilities. The reason for this extended impact is that the interchanges with I-55 and I-65 offer both expedited access beyond the region and local access to nearby areas. Having local access results in significant improvements in accessibility along these interstates.

As stated, previously, the accessibility improvements of extrapolations or interpolations of these two alignment alternatives formed the basis for the impact assessments for the three additional alternatives.

E. Impact of Changes in Accessibility Indexes on Residential Development

Improving access to jobs makes a TAZ more attractive for residential development, assuming all other factors influencing development are held constant. Appling the changes in the accessibility indexes, discussed in the preceding section, to the 2010-2040 forecasted

baseline growth in households, yielded an initial redistribution of households representing the impact of building the Illiana Expressway. Following this initial redistribution, three levels of adjustments were made.

- **Setting a Ceiling** – The holding capacity (households) for each TAZ is calculated using such criteria as prevailing densities and available developable land. Households in excess of these capacities are redistributed to nearby zones experiencing increases in accessibility to jobs.
- **Setting a Floor** – TAZ's with zero household growth, but which would experience a significant increase in accessibility to jobs, are assigned a minimum number of additional households. The magnitude of these additional households is a function of the increase in accessibility index.
- **Balancing the accessibility-induced adjustments** – The sum of the Illiana Expressway-induced growth in households and population, as adjusted by the preceding two steps, is balanced by reduction in growth elsewhere in the Chicago CMSA. The magnitude of the reduction in growth, by TAZ, is determined by the change in its accessibility index.

Balancing the increases with decreases in forecasted growth is a policy assumption of ACG's build/no-build impact analysis model. Not undertaking such balancing implies more growth in the Chicago CMSA at the expense of other regions within the U.S. There is no basis for assuming such transfers among regions in the absence of a nationwide, single transportation modeling effort. It should be noted that, in the case of the Illiana Expressway impact analysis, the household forecast increases, prior to the balancing process, do exceed the reductions. To compensate, the increases were kept the same and the reductions were factored-up to equal them. Accordingly, the balancing process overemphasizes one development concern; that is, shifting household growth from the mature urban core to the outer edges of the region. This, however, has been the major development trend in the region over the past 90 years, as documented in the prior report on socio-economic trends.

Exhibit #8 shows the impact of the Build 1 Alternative on the redistribution of population, by TAZ. The TAZ's receiving most of the additional growth in population are those experiencing significant changes in accessibility. TAZ's experiencing lesser growth are the TAZ's experiencing almost no measurable increase or reduction in accessibility, but which are forecasted to experience considerable 2010-2040 growth in households under the Baseline Alternative. It should be noted, that no TAZ would experience an actual decline in households during the period 2010-2040.

Table #2 shows the population impacts, by county and sub-areas in Cook County, for the Build 1 Alternative (Northern Alignment). This table shows the 2040 impacts in population as the differences between the Baseline and Build 1 Alternative forecasts. These impacts are the net differences (sum of positive and negative TAZ changes) for each of the Counties shown. For the Chicago CMSA, as a whole, 33,430 persons will be attracted

into the vicinity of the Illiana Expressway Build 1 Alternative. Most of this additional population (approximately 82 percent) are attracted to Will and Lake Counties; the balance are assigned (in order of additional population) to South Cook, Porter, Kendall and Grundy Counties. This additional population is balanced by a lesser growth, of equal size, elsewhere. Most of this lesser growth is from the City of Chicago, Kane, Lake and McHenry Counties (approximately 77 percent). The balance is distributed throughout DuPage, Cook, Winnebago, Boone and DeKalb Counties. Three townships in Northern Kendall and Will Counties show slight losses in growth. All other counties south of the Build 1 Alternative either grow or have no impact.

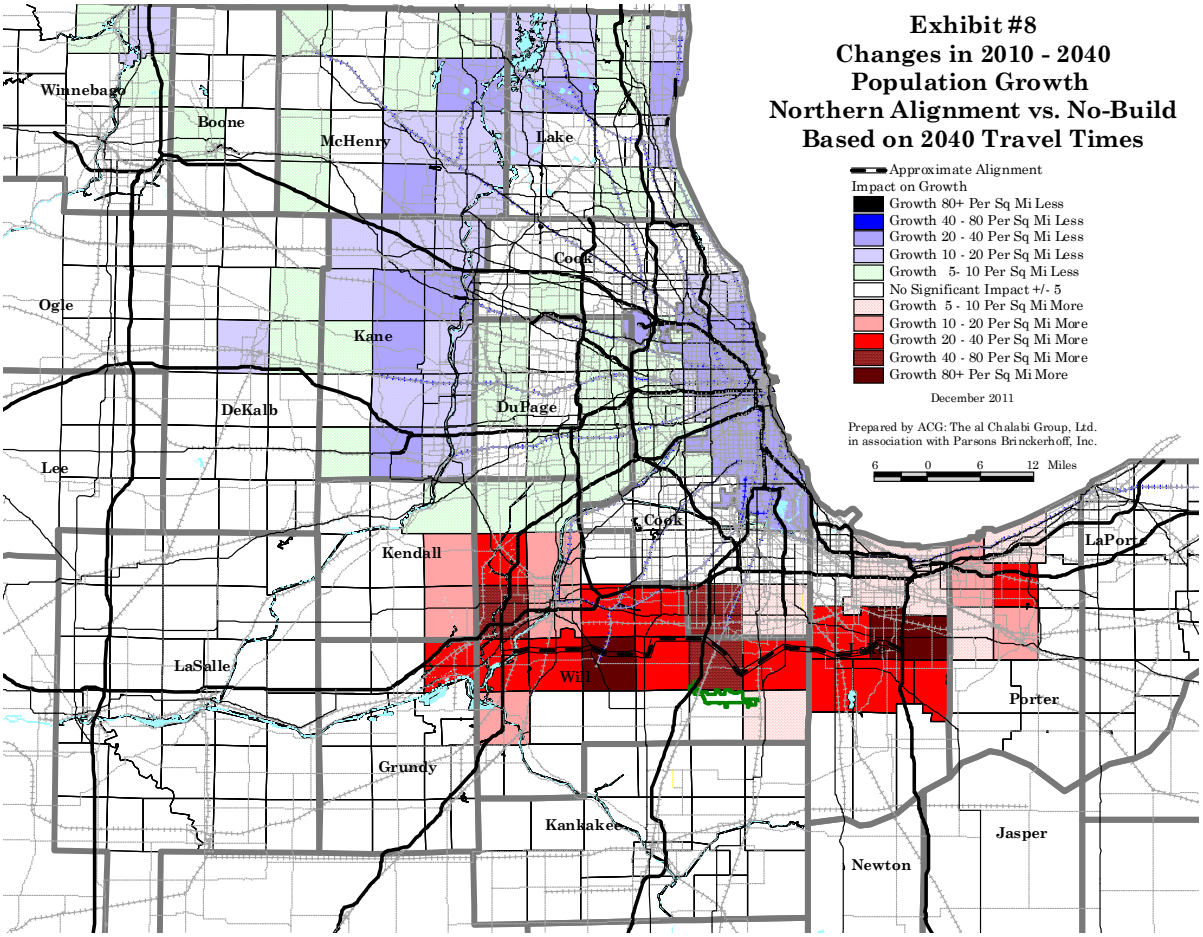
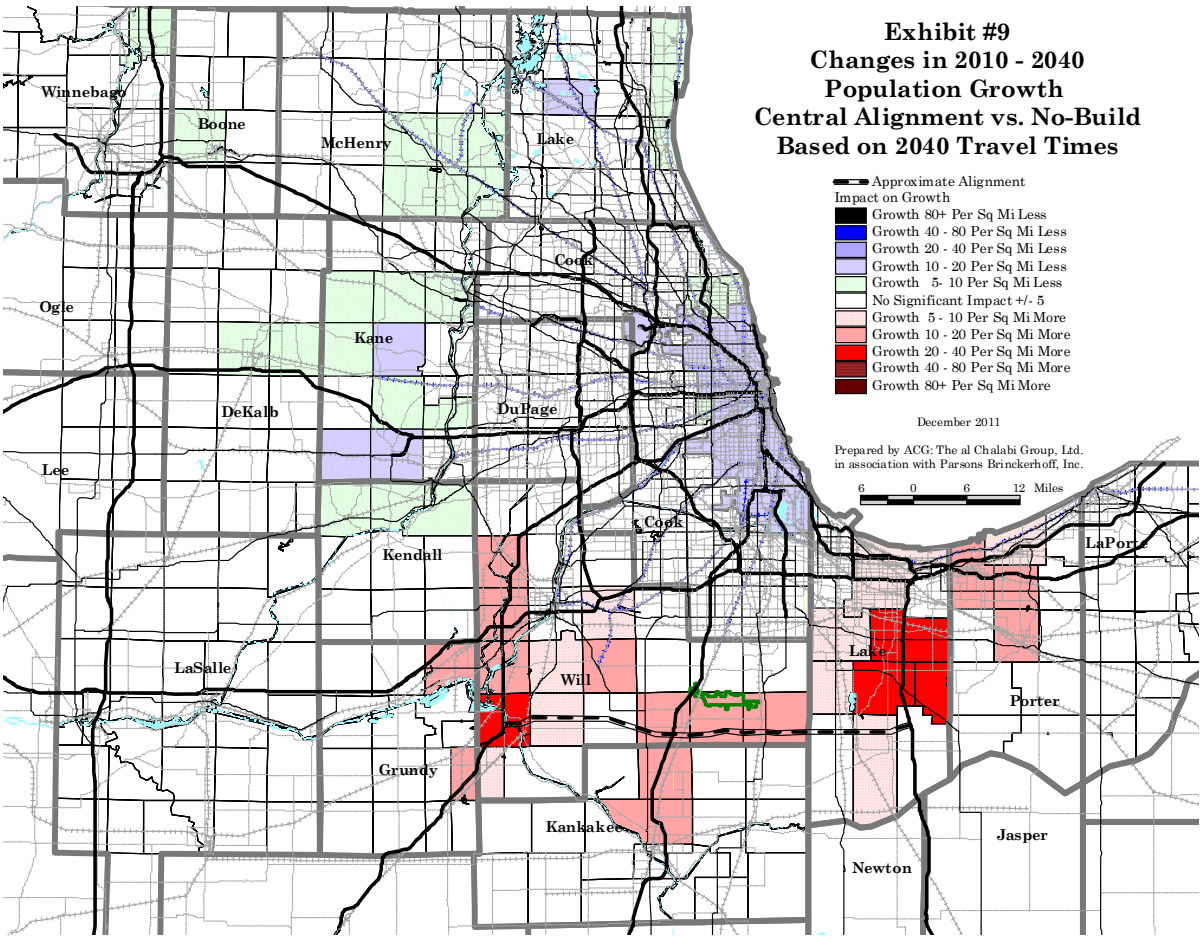


Exhibit #9 and Table #3 present the same findings as the above, but for the Build 2 Alternative (Central Alignment). The overall impact of this alternative, on the redistribution of population, is considerably less than that of the Build 1 Alternative – or 12,812 persons. Will and Lake Counties would experience the greatest positive growth under this alternative, but less than under the previous one. Kankakee County experiences some growth along I-57, approximately 1,077 persons. Porter and Grundy Counties would receive fewer positive increases; Kendall and South Cook Counties would be less (1,053 and 177, respectively); and there would be lesser growth in the counties north of I-80-94. One reason for this difference is that the Build 2 (Central Alignment) Alternative is farther

Table #2 Summary of Net 2040 Socio-Economic Forecasts Build 1 Alternative (Northern)		
	Population Impacts Build 1 - Baseline	**Employment Impacts Build 1 - Baseline**
	Net	**Net**
South Suburban Cook	1,625	465
Grundy	1,184	534
Kankakee	-110	-28
Kendall	883	209
Will	17,782	9,668
Lake, Indiana	9,737	6,839
Porter, Indiana	2,329	1,522
South Sub-Region	**33,430**	**19,209**
Chicago	-7,406	-2,821
North Suburban Cook	-1,564	-1,829
West Suburban Cook	-825	-1,154
DeKalb	-1,076	-318
DuPage	-1,858	-2,444
Kane	-7,827	-3,970
Lake, Illinois	-4,440	-3,239
LaPorte, Indiana	110	121
LaSalle	-176	-107
McHenry	-6,250	-2,451
Boone	-770	-217
Lee	-5	-2
Ogle	-151	-85
Winnebago	-1,314	-658
Region Remainder	**-33,552**	**-19,174**
Study Region	**-122**	**35**



removed from the center of the region and is on the outer edge of urbanization; therefore, it is not as effective a magnet for pulling development outward. However, a far-more significant cause is in the landscape: the major (and extensive) rivers and prairies in Grundy County; the reservation of land for the Midewin National Tallgrass Prairie and multimodal facilities in West Will; and the planned South Suburban Airport in East Will. These developments will impede growth to the south and beyond them until there is significant pent-up pressure to leap-frog over them.

F. Impact of Changes in Accessibility Indexes on Employment Distribution

Whereas improving a TAZ's accessibility to jobs makes it more attractive for residential development; the opposite also is true. Improved accessibility to residential concentrations implies better access to labor and consumption, making the area more attractive to industrial and commercial development. In the case of the Illiana Expressway, the improved accessibility provided by it makes these two factors equally responsible for growth. Will County has been a major growth area – not only for the Chicago region, but in the nation. Major developments in transportation and multi-modal developments serving the entire region have been based on a central location and access to national transport networks. Both factors reinforce one another.

Table #3 Summary of Net 2040 Socio-Economic Forecasts Build 2 Alternative (Central)		
	Population Impacts Build 2 - Baseline	**Employment Impacts Build 2 - Baseline**
	Net	**Net**
South Suburban Cook	-177	-135
Grundy	523	213
Kankakee	1,077	562
Kendall	-1,053	-431
Will	4,874	3,553
Lake, Indiana	5,228	3,551
Porter, Indiana	2,340	1,497
South Sub-Region	**12,812**	**8,810**
Chicago	-2,695	-1,187
North Suburban Cook	-471	-804
West Suburban Cook	-272	-525
DeKalb	-850	-265
DuPage	-503	-1,024
Kane	-3,758	-1,956
Lake, Illinois	-1,570	-1,645
LaPorte, Indiana	143	165
LaSalle	-24	45
McHenry	-1,695	-902
Boone	-435	-126
Lee	-8	-5
Ogle	-98	-58
Winnebago	-573	-306
Region Remainder	**-12,809**	**-8,593**
Study Region	**3**	**217**

The methodology for determining the impact of changes in accessibility indexes on employment distribution is the same as that used for residential re-distribution. Case study methodology was the approach used to forecast the additional employment attracted to the proximity of interchanges. Furthermore, substantial development has occurred recently; and many developments have been announced or discussed. Interchange locations are particularly appropriate for the type of development that is expected to materialize over the next several decades. The South Suburban Airport and its associated (direct, indirect, induced) development have been under study for many years.

Once the distribution of additional growth in employment was completed, a balancing process was undertaken, similar to that described for studying the residential impacts of the Illiana Expressway Alternatives. Again, the total 2040 employment forecast for the CMSA is assumed to remain unchanged. The 2010-2040 employment growth in TAZ's forecasted to experience reduction in accessibility were reduced proportionately.

Exhibit #10 shows the impact of the Build 1 (Northern Alignment) Alternative on the redistribution of employment. The TAZ's that are forecasted to receive additional growth, above the baseline forecast, in employment are concentrated around the proposed interchanges with Interstate highways; in and adjacent to the South Suburban Airport; and in proximity to the areas with or forecasted to receive multi-modal facilities, approximately 9,668 jobs in Will County. Development in Lake County is along the key north-south I-65 and along I-80-94, with 6,839 jobs. TAZ's forecasted to experience lesser growth are concentrated in the City of Chicago and along Interstate routes in Cook, Lake, McHenry and DuPage Counties. These latter (high employment growth) areas are experiencing very small decreases in accessibility. However, the product of low decreases in accessibility and high employment growth yields measurable change. It should be noted, again, that no TAZ is forecasted to experience a loss of employment as a result of the Illiana Expressway, only reduction in the forecasted growth. However, there are TAZ's forecasted to lose employment as a result of other factors; and these losses are reflected in the baseline forecasts.

Exhibit #11 shows the impact of the Build 2 (Central Alignment) Alternative on the redistribution of the 2010-2040 employment growth. This alternative attracts considerably less additional growth in employment; 8,810 jobs, less than half that of the Build 1 Alternative. The additional employment is forecasted to occur at and in proximity to the South Suburban Airport; along I-57 to Kankakee; along I-55 at key interchanges; at the interchange with I-65 and adjacent to it; and along I-80.

Table #2, previously shown, shows the employment forecasts, by county and sub-areas in Cook County, for the Build 1 Alternative. This table shows the net employment change by TAZ, to positive (additional) and negative (less growth) sums when summed by county or sub-county area. The Build 1 Alternative causes the redistribution of 19,209 jobs within the Chicago CMSA. Of these, 9,668, or approximately 50 percent, of these jobs are attracted to Will County; 6,839, or nearly 36 percent, are attracted to Lake County.

Other counties receiving modest number of additional jobs are South Cook, Porter and Grundy. The additional job growth is balanced by lesser job growth in Western and Northern Cook, Lake, DuPage, McHenry and Kane Counties. It should be noted, that these

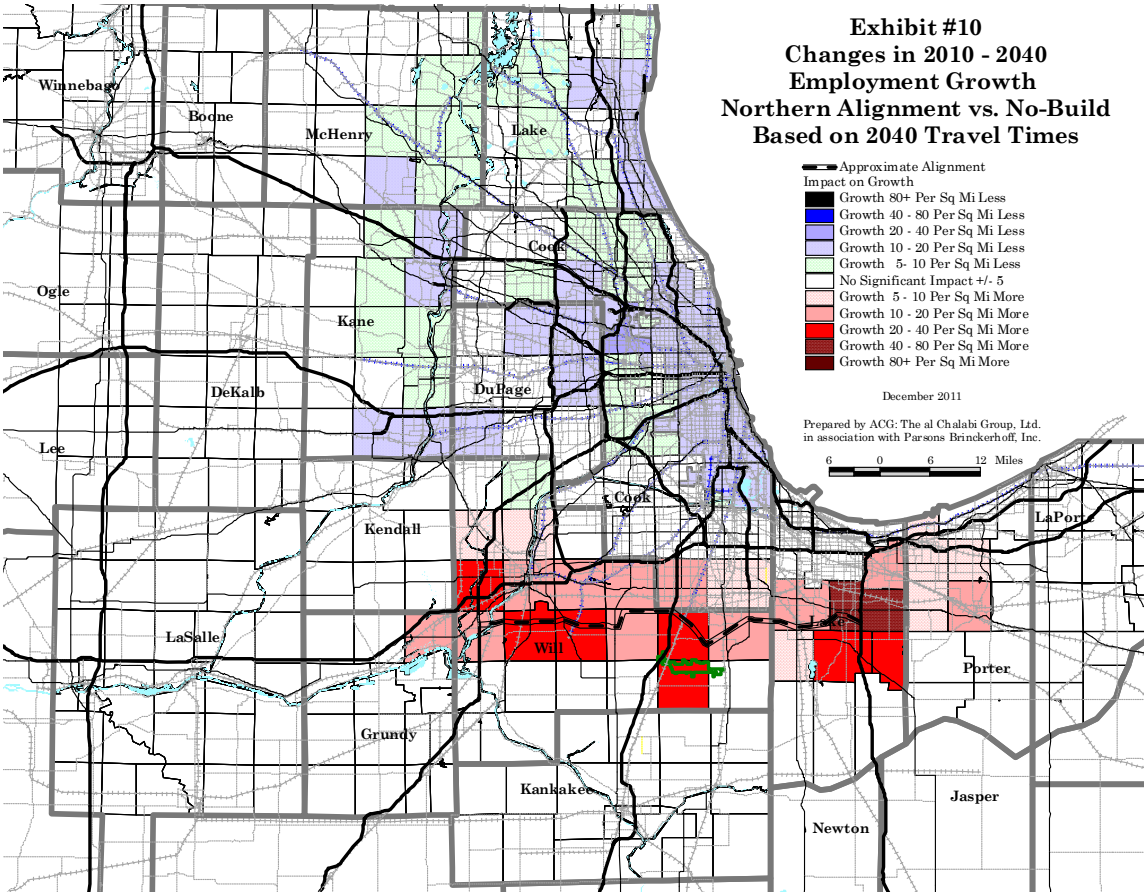


Exhibit #10
Changes in 2010 - 2040
Employment Growth
Northern Alignment vs. No-Build
Based on 2040 Travel Times
Approximate Alignment
Impact on Growth
Growth 80+ Per Sq Mi Less
Growth 40 - 80 Per Sq Mi Less
Growth 20 - 40 Per Sq Mi Less
Growth 10 - 20 Per Sq Mi Less
Growth 5- 10 Per Sq Mi Less
No Significant Impact +/- 5
Growth 5 - 10 Per Sq Mi More
Growth 10 - 20 Per Sq Mi More
Growth 20 - 40 Per Sq Mi More
Growth 40 - 80 Per Sq Mi More
Growth 80+ Per Sq Mi More
December 2011
Prepared by ACG: The al Chalabi Group, Ltd.
in association with Parsons Brinckerhoff, Inc.
6 0 6 12 Miles
Winnebago
Boone
McHenry
Lake
Cook
Ogle
Kane
DeKalb
DuPage
Lee
Kendall
LaPorte
LaSalle
Will
Porter
Grundy
Kankakee
Jasper
Newton

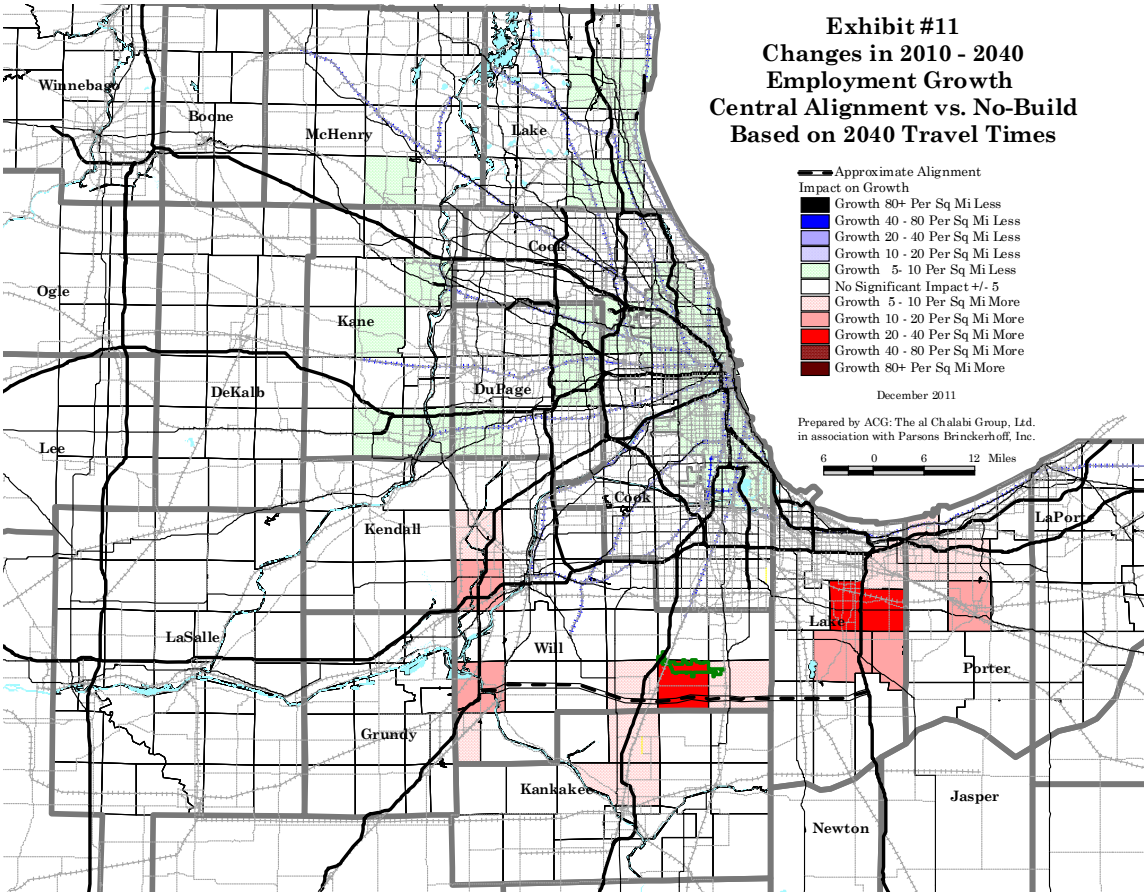


Exhibit #11
Changes in 2010 - 2040
Employment Growth
Central Alignment vs. No-Build
Based on 2040 Travel Times
Approximate Alignment
Impact on Growth
Growth 80+ Per Sq Mi Less
Growth 40 - 80 Per Sq Mi Less
Growth 20 - 40 Per Sq Mi Less
Growth 10 - 20 Per Sq Mi Less
Growth 5- 10 Per Sq Mi Less
No Significant Impact +/- 5
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Jasper
Newton

reductions in employment growth represent 0.7 percent to 1.5 percent of 2010-2040 baseline employment growth for these Counties.

Table #3, previously shown, shows the same data, described above, for the Build 2 Alternative. The overall job redistribution is considerably less for this alternative (8,810), or less than half that of the Build 1 Alternative. Will and Lake Counties' 2040 employment is forecasted to be 7,104 greater than under the Baseline Alternative, but considerably less (43 percent) than that created by the B1 Alternative. Only one other county – Porter – receives more jobs under this Alternative than under the Baseline. Job growth reductions are less throughout the remainder of the region that under the B1 Alternative.

G. Residential and Employment Impacts of Alternatives A3S2, B3, and B4

Three additional corridor alternatives were evaluated; they are based on the extrapolated/interpolated accessibilities calculated from the Accessibility Indexes of the Build 1 and Build 2 Alternatives. These are:

- **Alternative A3S2** – This alternative takes a central route – similar to Build 1 – through Will County, but a more-southern route through Lake County.
- **Alternative B3** – This is an alignment identical to that of B2 (Central Alignment).
- **Alternative B4** – This alignment is similar to that of Build 2, but with a more-southern route through Lake County.

Exhibits #12 and #13 show population and employment impacts of Alternative A3S2. The positive population impacts are similar (but slightly lower) to those of Build 1. However, because of its more-southern route, these impacts are spread out, more to the south, along I-57 to Kankakee, and in South Lake County. The impacts along the expressway, itself, are less robust. Because this alternative draws fewer jobs to it, its impacts on growth in the remainder of the metro area are also less, but are located in the same general areas as those of Build 1. **(Please note: At this point, terminology was changed from "No-Build" to "No-Action")**

Employment impacts also are similar, but slightly lower, to those of Build 1 than are the population impacts. Employment impacts remain clustered along the expressway, itself, and at key interchanges. Jobs are drawn from the same areas to the north, but in fewer numbers, as those of Build 1.

Exhibits #14 and #15 show population and employment impacts of Alternative B3. With an alignment that is the same as that of Build 2, the population and employment impacts – both positive and negative – are the same.

Exhibits #16 and #17 show population and employment of Alternative B4. The positive impacts, in Illinois, remain the same as those of the Build 2 Alternative. Positive impacts, for both population and jobs, are pulled further south, in Lake County. Both population and jobs are attracted from other parts of the metro area similar to that of B4.

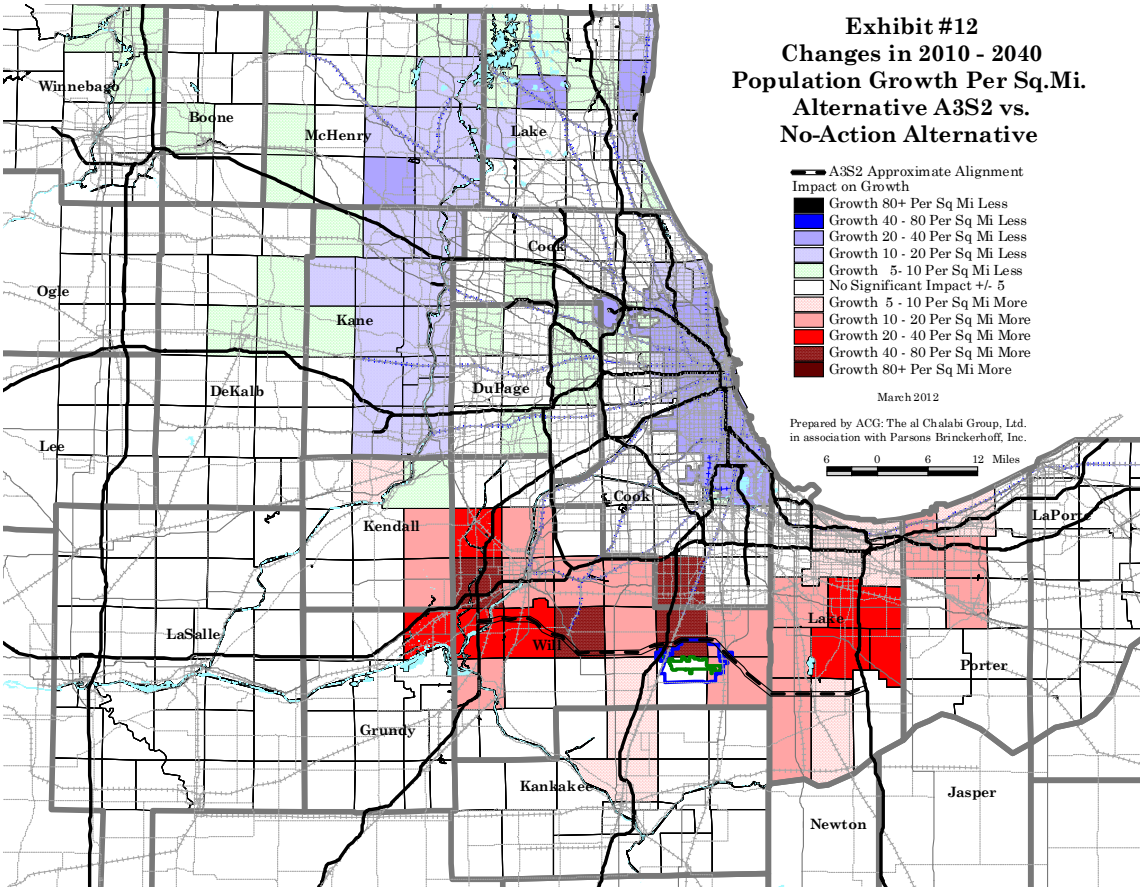


Exhibit #12
Changes in 2010 - 2040
Population Growth Per Sq.Mi.
Alternative A3S2 vs.
No-Action Alternative

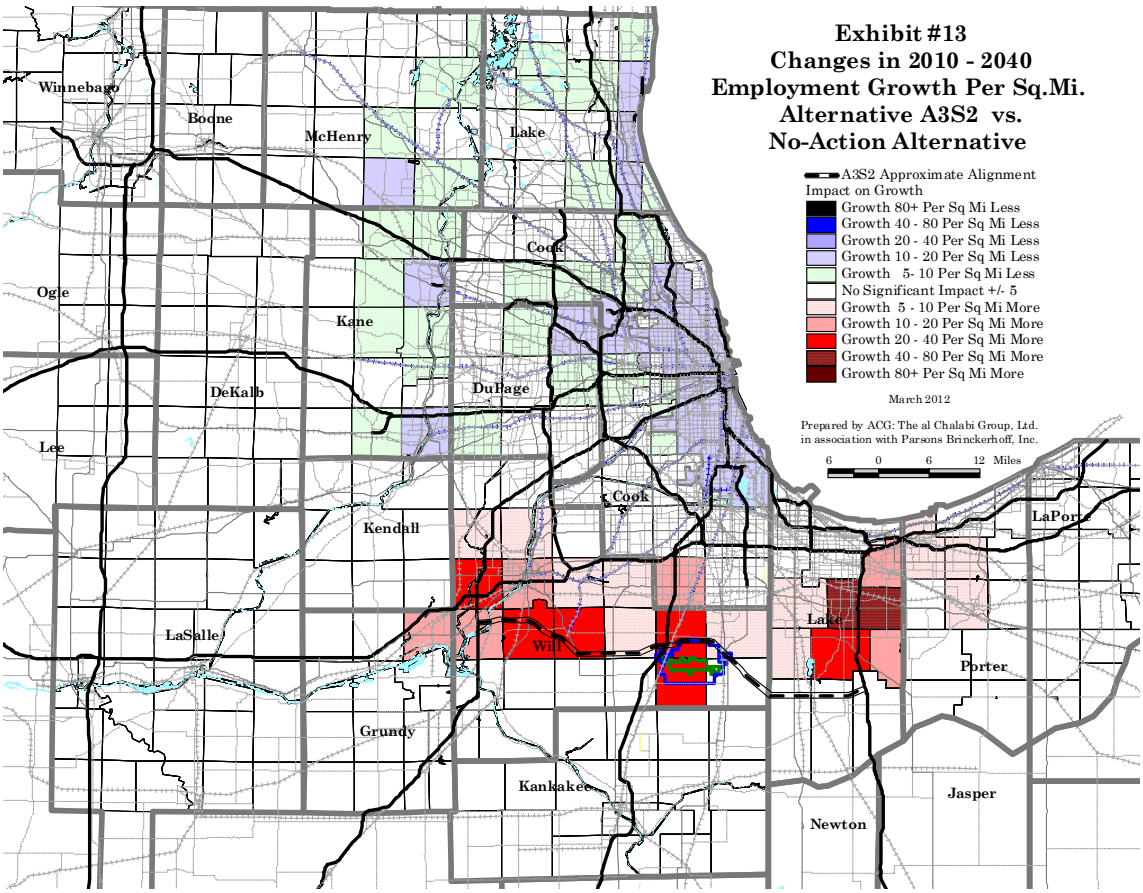
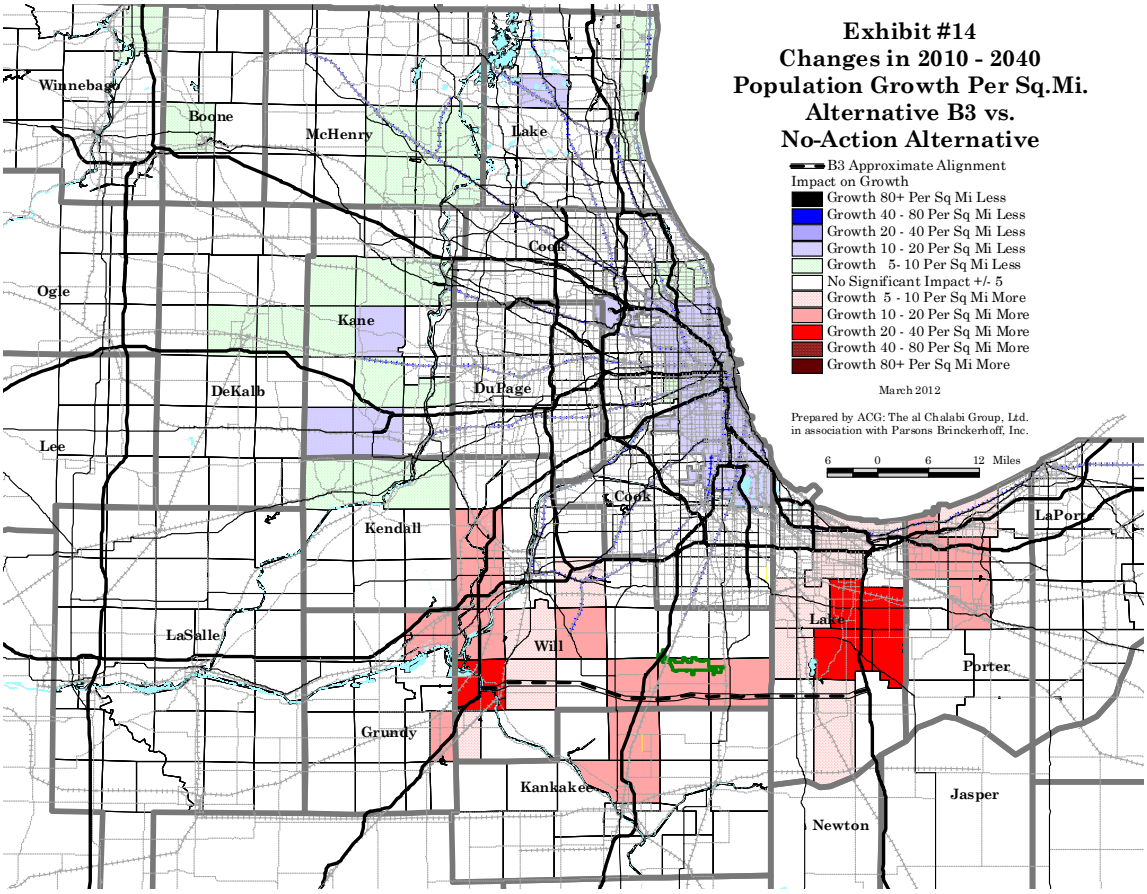


Exhibit #13
Changes in 2010 - 2040
Employment Growth Per Sq.Mi.
Alternative A3S2 vs.
No-Action Alternative


Winnebago
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McHenry
Lake
Cook
Ogle
Kane
DeKalb
DuPage
Lee
Kendall
LaSalle
Will
Grundy
Kankakee
Porter
Jasper
Newton
Exhibit #14
Changes in 2010 - 2040
Population Growth Per Sq.Mi.
Alternative B3 vs.
No-Action Alternative
B3 Approximate Alignment
Impact on Growth
Growth 80+ Per Sq Mi Less
Growth 40 - 80 Per Sq Mi Less
Growth 20 - 40 Per Sq Mi Less
Growth 10 - 20 Per Sq Mi Less
Growth 5- 10 Per Sq Mi Less
No Significant Impact +/- 5
Growth 5 - 10 Per Sq Mi More
Growth 10 - 20 Per Sq Mi More
Growth 20 - 40 Per Sq Mi More
Growth 40 - 80 Per Sq Mi More
Growth 80+ Per Sq Mi More
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Prepared by ACG: The al Chalabi Group, Ltd.
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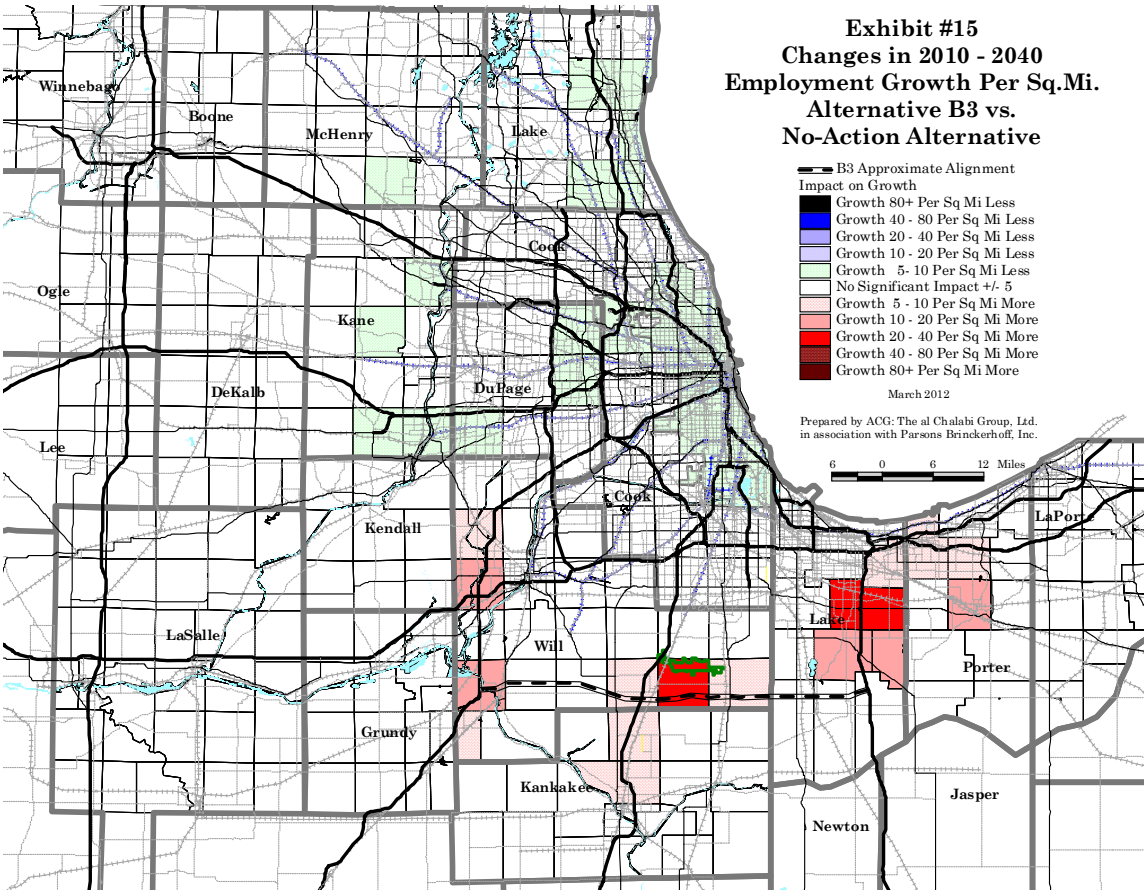
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Kankakee
Porter
Jasper
Newton
Exhibit #15
Changes in 2010 - 2040
Employment Growth Per Sq.Mi.
Alternative B3 vs.
No-Action Alternative
B3 Approximate Alignment
Impact on Growth
Growth 80+ Per Sq Mi Less
Growth 40 - 80 Per Sq Mi Less
Growth 20 - 40 Per Sq Mi Less
Growth 10 - 20 Per Sq Mi Less
Growth 5- 10 Per Sq Mi Less
No Significant Impact +/- 5
Growth 5 - 10 Per Sq Mi More
Growth 10 - 20 Per Sq Mi More
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Growth 40 - 80 Per Sq Mi More
Growth 80+ Per Sq Mi More
March 2012
Prepared by ACG: The al Chalabi Group, Ltd.
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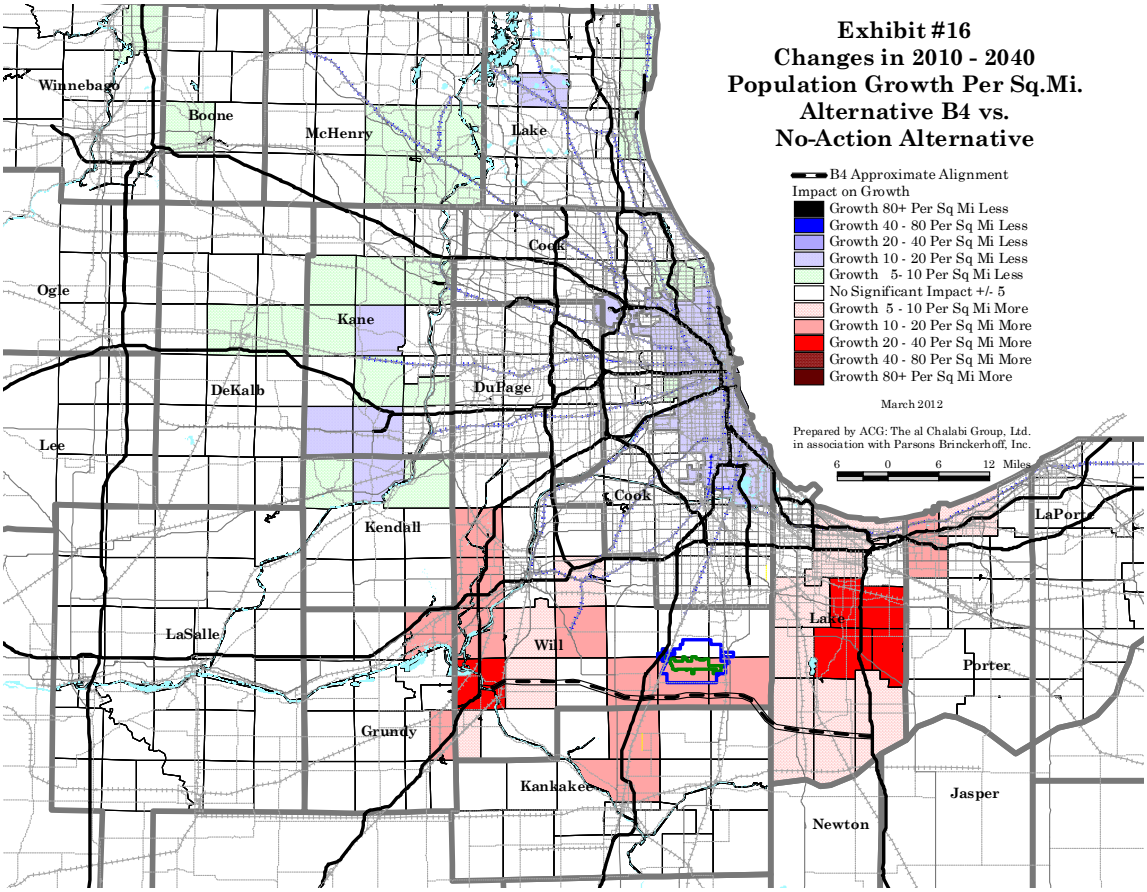


Exhibit #16
Changes in 2010 - 2040
Population Growth Per Sq.Mi.
Alternative B4 vs.
No-Action Alternative

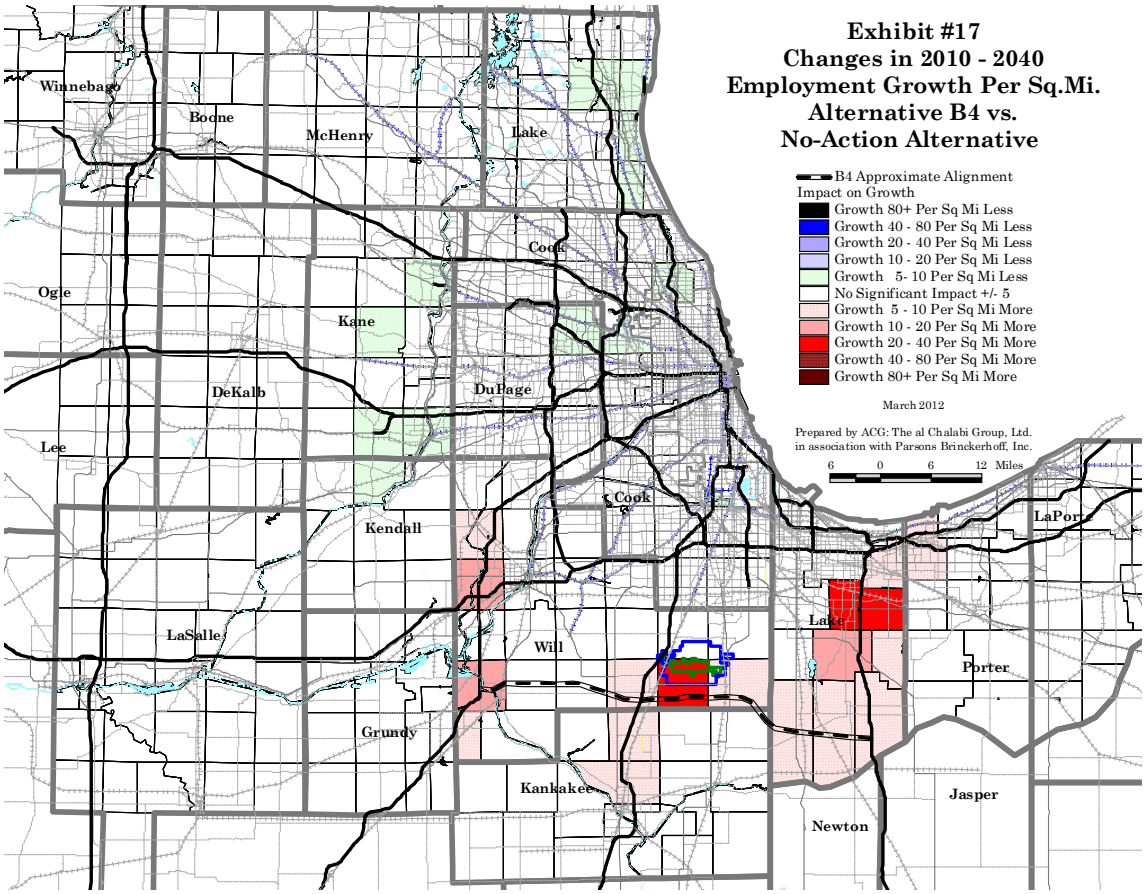


Exhibit #17
Changes in 2010 - 2040
Employment Growth Per Sq.Mi.
Alternative B4 vs.
No-Action Alternative

Table #4 Summary of Net 2040 Socio-Economic Forecasts Alternative A3S2		
	Population Impacts A3S2 - Baseline	**Employment Impacts A3S2 - Baseline**
	Net	**Net**
South Suburban Cook	1,427	374
Grundy	1,184	526
Kankakee	544	284
Kendall	795	77
Will	14,114	8,166
Lake, Indiana	6,731	4,791
Porter, Indiana	2,179	1,305
South Sub-Region	**26,974**	**15,523**
Chicago	-5,916	-2,258
North Suburban Cook	-1,247	-1,455
West Suburban Cook	-658	-916
DeKalb	-858	-256
DuPage	-1,482	-1,942
Kane	-6,245	-3,155
Lake, Illinois	-3,564	-2,638
LaPorte, Indiana	0	0
LaSalle	-151	-111
McHenry	-4,987	-1,949
Boone	-614	-174
Lee	-3	-1
Ogle	-121	-69
Winnebago	-1,048	-524
Region Remainder	**-26,894**	**-15,448**
Study Region	**80**	**75**

Tables #4, and #3, show the 2040 population and employment impacts of Alternatives A3S2, B3 and B4, respectively. The impacts of A3S2 are similar to, but slightly less than those of Build 1; they are listed, separately, on Table #4, on page 22. The calculation of the impacts for Alternatives B3 and B4 are the same as those for the Build 2 Alternative, previously described; and they are shown on Table #3.

IV. Conclusions

It is evident that the transportation planning profession now recognizes the impact that a major transportation facility has on development. There are several planning tools, recognized as works in progress, that isolate the impact of transportation facilities on development from other factors influencing change. The process presented in this report is one such methodology that has been used successfully and has been accepted for other highway impact assessments.

The growth of the Chicago CMSA is driven by the economic vitality of the region, an expanding national economy, and the growth of the U.S. population. While the Great Recession has taken its toll on jobs across America, the Chicago Metro Area, since 2010, has been adding jobs (primarily private sector) at a pace consistent with that experienced by recovering metro areas. For the period 2010-2040, the Extended Region of Chicago (18 counties) is forecasted to grow by 3.02 million people and 1.97 million jobs. A significant portion of this growth would be occurring at the outer edges of this region, where developable land is available at reasonable prices. As pointed out in the Market-Driven No-Build Scenario, Cook and DuPage Counties are approaching full development. The oldest parts of Cook County, including the City of Chicago, are undergoing transitional redevelopment (from commercial to residential) and are expected to accommodate some of the forecasted population growth. Job growth will follow to serve new population centers; but major established job centers also will continue to grow.

The outward expansion of the Chicago CMSA necessitates the construction of new transportation facilities. These new facilities, themselves, will attract additional households, population and jobs. The additional generated growth is moderate, particularly for households and population. For jobs, the additional growth is somewhat greater; but this higher level of growth tends to improve job/household ratios, slightly.

The analysis undertaken by this study estimates that building the Illiana Expressway would attract approximately 12,800 to 33,400 additional persons and 8,800 to 19,200 additional jobs to the Southern counties of the region. The higher numbers are associated with the Build 1 and A3S2 Alternatives; and lower impacts, with the Build 2, Build 3 and Build 4 Alternatives. The counties forecasted to receive most of this additional growth are Will, Illinois and Lake, Indiana. The additional population and employment forecasted for Will County represent approximately 0.7 to 2.6 percent and 0.8 to 2.3 percent, respectively, of its "Baseline" forecasted growth. This is a relatively small percentage due to the fact that Will County is one of the fastest growing counties in Illinois and the U.S. The Baseline growth is that growth forecasted to occur if the Illiana Expressway is not built. The corresponding additional population and employment percentages for Lake County are approximately 4.1 to 7.5 percent and 4.4 to 8.5 percent,

respectively. These higher percentages are due to the fact that Lake County is a smaller county with lower Baseline growth rates.

The additional population and employment attracted to the Illiana Expressway vicinity are balanced by equal reductions in forecasted growth occurring at other locations within the Chicago CMSA. The concentrations of the reduced growth are forecasted to be in the north and west edges of the urbanized area (Kane and McHenry Counties), away from the Illiana, and in the City of Chicago; both these areas are forecasted to experience significant growth. The reduced population growth represents 0.9 to 2.4 percent of the Baseline growth forecasted for the City of Chicago and 0.4 to 1.7 percent of the Baseline growth forecasted for Kane and McHenry Counties (Illinois). The percentages for reduced employment in Chicago and these areas are 1.1 to 2.6 percent and 0.5 to 1.6 percent, respectively. The outward migration from the mature areas of the region to its edges is a well-established and long-term phenomenon. As urban areas reach their planned, zoned or holding capacities, new developments accommodate the overflow.

The following table in Appendix B – Detailed 2040 Forecasts of the Evaluated Alternatives: Build minus Baseline, shows the net impacts on Population and Employment for the five Illiana Expressway Alternatives.

Appendix A
Travel Time Impedance Estimation

Appendix A

Travel Time Impedance Estimation

The following paragraphs describe the procedure to estimate a travel time based impedance function based on northeastern Illinois-northwestern Indiana work trip data. This function is the inter-zonal impedance in a gravity type trip distribution model. The calibrated function was provided to the subconsultant responsible for the development forecasts for the Prairie Parkway project.

To estimate this function, a gravity model was calibrated to Census Transportation Planning Package (CTPP) Part III journey to work flow tables produced from Census 2000 long-form questionnaires. The estimation procedure is an iterative approach frequently used to calibrate gravity type trip distribution models to observed travel time distributions. Impedances are initially estimated, then used in a gravity model to distribute trips. The travel time distribution for these trips is compared against an observed travel time distribution and the impedances factored by the ratio of observed to distributed trips in a travel time interval. Trips are repeatedly distributed by the model and the impedances factored iteratively until reasonable agreement between the observed and distributed trips travel time distribution is achieved.

General Trip Distribution Gravity Model

The general formulation of the trip distribution gravity model consists of the following equation that relates the number of trips between zones to the travel impedance between zones.

$$T_{i,j} = a_i b_j F_{i,j}$$

In this equation: $T_{i,j}$ equals the number of trips between zone i and zone j; a_i and b_j are balancing coefficients that depend on trip productions and trip attractions respectively, and; $F_{i,j}$ is the inter-zonal impedance between zones i and j.

In a doubly constrained gravity model the trips distributed from a zone must equal the trip productions in the zone (P_i), and the trips received by a zone must equal the zone's trip attractions (A_j).

1. $$P_i = a_i \sum_j b_j F_{i,j}$$

2. $$A_j = b_j \sum_i a_i F_{i,j}$$

These three sets of simultaneous equations (the trip distribution and the two constraints) can then be readily solved using two-dimensional matrix balancing when the inter-zonal impedances $F_{i,j}$s are known.

For gravity type trip distribution models, the most widely used mathematical relationship between the inter-zonal impedance and travel time is the Gamma function. This function has three parameters (α, β and γ) that permit a number of different forms for these impedance-travel time relationships, from negative exponential to near normal.

$$F_{i,j} = \alpha t_{i,j}^{\beta} e^{\gamma t_{i,j}}$$

Steps in the $F_{i,j}$ Estimation Algorithm

Several matrices must be prepared before the algorithm to estimate $F_{i,j}$ can be implemented.

1. A zone to zone matrix of travel time categories is prepared. In this case, the base year Prairie Parkway peak period highway travel times are first rounded to integer minutes. All travel times greater than 250 minutes are set to 250. Intra-zonal travel times are assumed to equal two-thirds the travel time to the nearest neighbor zone. No travel times are less than one minute.
2. The auto driver, carpool, taxi, and motorcycle journey to work flows from the northeastern Illinois and northwestern Indiana CTPPs are tabulated into a table of flows between Prairie Parkway zones.
3. Zone level trip productions and attractions are summed from the CTPP trip table.
4. The travel time frequency distribution (the number of trips at travel times between 1 and 250) is tabulated from the CTPP trip table and Prairie Parkway zone to zone peak highway times.

Initial $F_{i,j}$ Estimate. An initial estimate of the $F_{i,j}$s was developed using the three-dimensional balancing module available in the EMME/2 transportation planning software. In this approach, a third constraint is specified for the modeled trip table that requires the distributed trips to match a specified travel time distribution.

The general gravity model distribution is rewritten as:

$$T_{i,j} = a_i b_j f_{t_{i,j}} m_{i,j}$$

The $f_{t_{i,j}}$ is the balancing coefficient for the travel time t required to move between zone i and zone j, while $m_{i,j}$ is an initial matrix to be balanced. All other quantities are as defined previously.

As described above, the $F_{i,j}$s are iteratively estimated as in a typical gravity model calibration and the initial starting estimate of the $F_{i,j}$s need only be a crude approximation. However, the best initial estimates of $F_{i,j}$ are obtained when the matrix to be balanced has cells equal to one where interchanges exist in the calibration trip table and zero for pairs of zones without movements.

The three constraints on the distributed trips are as follows:

1. $P_i = a_i \sum_j b_j f_{t_{i,j}} m_{i,j}$

2. $A_j = b_j \sum_i a_i f_{t_{i,j}} m_{i,j}$

3. $P_t = \sum_{(i,j) \text{ with } t_{i,j}=t} a_i b_j f_{t_{i,j}} m_{i,j}$

The first two constraints are the same as in a doubly constrained gravity model, requiring trips sent to equal productions and trips received to equal attractions. The third constraint states that the summed distributed trips for all zone pairs at travel time t must equal the number of trips specified in the travel time frequency distribution at travel time t. The four

sets of simultaneous equations are again solved iteratively by the three-dimensional balancing algorithm in EMME/2.

FIGURE 1 Initial Estimated $F_{i,j}$s from Three-Dimensional Balancing

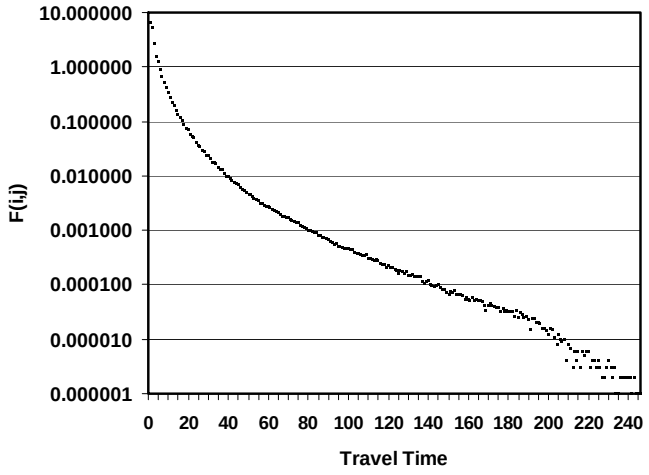
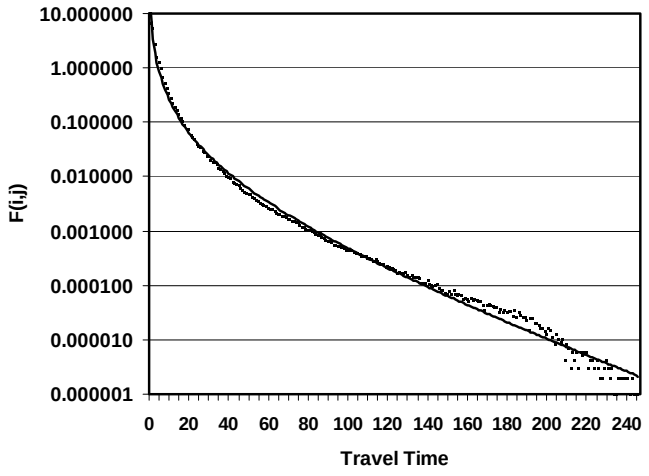


FIGURE 2 First Smoothed $F_{i,j}$s



The resulting balancing coefficients ($f_{t_{i,j}}$s) for the third travel time distribution constraint are initial estimates of the $F_{i,,j}$s. Figure 1 is a plot of these estimated $F_{i,j}$s for the Prairie Parkway estimation.

Smoothing of $F_{i,j}$ Values. A Gamma impedance function is next fit to the above $F_{i,j}$ data points. Least squares regression is used to fit the natural log of the Gamma function values to the above $F_{i,j}$ data points, smoothing the $F_{i,j}$ values to a continuous function of travel time. The function estimated by the least squares regression is:

$$Ln(F_{i,j}) = Ln(\alpha) + \beta Ln(t_{i,j}) + \gamma\, t_{i,j} \ .$$

The resulting regression equation is plotted against the initial $F_{i,j}$ data points in Figure 2. The values for the three Gamma function parameters α, β, and γ estimated by the regression are 25.3, -1.8 and -0.03.

First Trip Distribution. Prairie Parkway base year person auto work trips were distributed using a gravity model with the smoothed $F_{i,j}$s. The travel time distributions for the CTPP highway commute trips and the Prairie Parkway auto work trip distribution are shown in Figure 3. There are clearly too many short distributed trips compared to the CTPP travel time distribution.

Factoring and Second Smoothed $F_{i,j}$s. The $F_{i,j}$s were adjusted by the ratio of observed to distributed trips for each minute travel time category. Since the CTPP and the Prairie Parkway trip tables have different totals the ratio was calculated from the proportions of trips at a given travel time. The Gamma impedance function was then re-estimated using the factored $F_{i,j}$s as data points, and these second smoothed $F_{i,j}$s are shown in Figure 4. The new values estimated for α, β and γ are 2.4, -1.0 and -0.03. Note that these parameters are such that the $F_{i,j}$s are reduced for short trips and increased for longer trips, which is consistent with the differences in the observed and distributed trip travel time distributions..

FIGURE 3 Travel Time Distribution for CTPP and First Distributed Trips

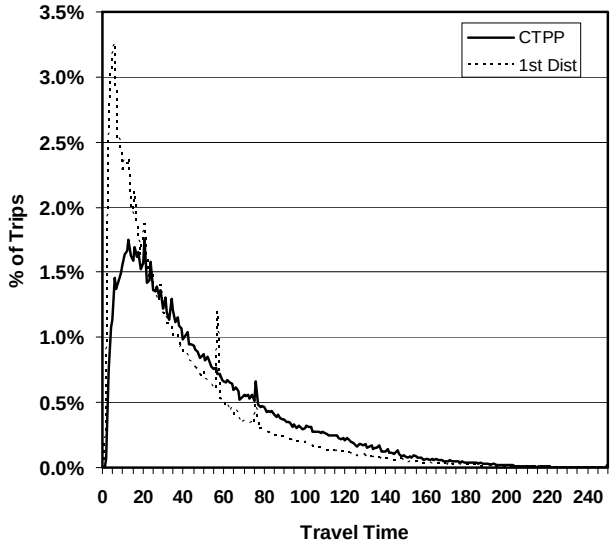
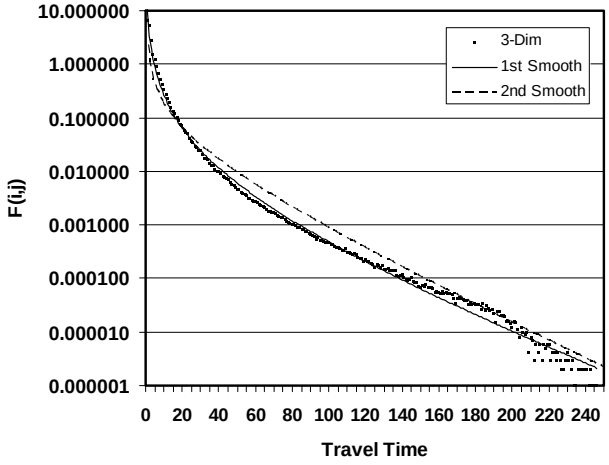


FIGURE 4 Second Smoothed $F_{i,j}$s



Second Trip Distribution. Trips were redistributed with the revised Gamma impedance function and the revised travel time frequency distribution is shown in Figure 5. Reasonable agreement between the two travel time frequency distributions is achieved after two iterations.

Factoring and Final Smoothed $F_{i,j}$s. The factoring and smoothing of the Fi,js was carried out a third and final time. The results are shown in Figure 6 for the final estimates of the values for the three parameters α, β and γ, which are 0.9, -0.7 and -0.03.

FIGURE 5 Travel Time Distribution for CTPP and Second Distributed Trips

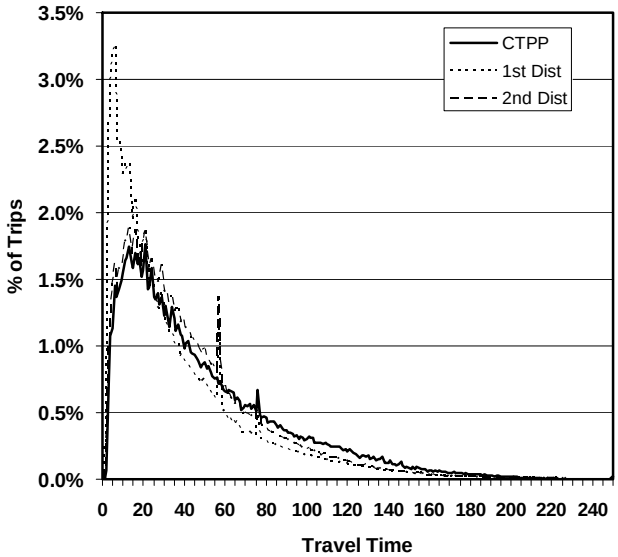
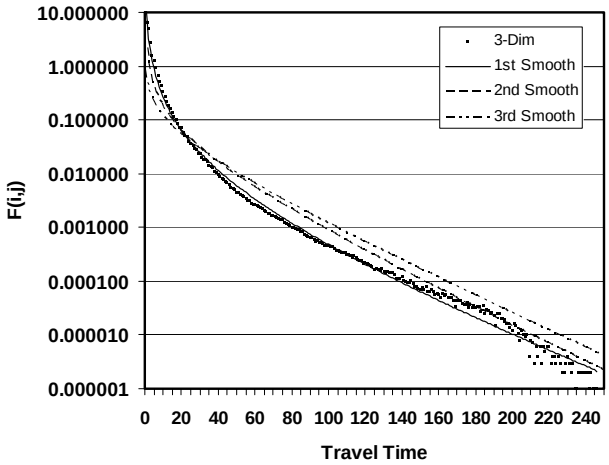


FIGURE 6 Final Smoothed $F_{i,j}$s



Appendix B
Detailed 2040 Forecasts of Evaluated Alternatives
Build minus Baseline

Table A-1
Detailed 2040 Forecasts of Evaluated Alternatives Build minus Baseline

	2010 Base Year Data		2040 Baseline Forecasts		2040 Northern Alignment (Build 1)		2040 Central Alignment (Build 2/ B3/ B4)		2040 A3S2 Alignment (Modified Northern Align't)		2040 Northern Alignment (Build 1) - Impact		2040 Central Alignment (Build 2/ B3/ B4) - Impact		2040 A3S2 Alignment Impact	
	Population	**Employment**	**Population**	**Employment**	**Population**	**Employment**	**Population**	**Employment**	**Population**	**Employment**	**Population**	**Employment**	**Population**	**Employment**	**Population**	**Employment**
South Suburban Cook	793,789	334,789	973,809	468,026	975,434	468,491	973,632	467,891	975,236	468,400	1,625	465	-177	-135	1,427	374
Grundy	50,063	21,873	83,665	36,975	84,849	37,509	84,188	37,188	84,849	37,501	1,184	534	523	213	1,184	526
Kankakee	113,449	55,231	150,000	75,000	149,890	74,972	151,077	75,562	150,544	75,284	-110	-28	1,077	562	544	284
Kendall	114,736	29,462	262,192	94,472	263,075	94,681	261,139	94,041	262,987	94,549	883	209	-1,053	-431	795	77
Will	677,560	249,681	1,366,456	672,961	1,384,238	682,629	1,371,330	676,514	1,380,570	681,127	17,782	9,668	4,874	3,553	14,114	8,166
Lake, Indiana	496,005	229,563	625,000	309,598	634,737	316,437	630,228	313,149	631,731	314,389	9,737	6,839	5,228	3,551	6,731	4,791
Porter, Indiana	164,343	71,768	222,563	107,060	224,892	108,582	224,903	108,557	224,742	108,365	2,329	1,522	2,340	1,497	2,179	1,305
South Sub-Region	2,409,945	992,367	3,683,685	1,764,092	3,717,115	1,783,301	3,696,497	1,772,902	3,710,659	1,779,615	33,430	19,209	12,812	8,810	26,974	15,523
Chicago	2,695,598	1,607,833	3,000,000	1,715,000	2,992,594	1,712,179	2,997,305	1,713,813	2,994,084	1,712,742	-7,406	-2,821	-2,695	-1,187	-5,916	-2,258
North Suburban Cook	1,062,657	824,795	1,125,001	921,342	1,123,437	919,513	1,124,530	920,538	1,123,754	919,887	-1,564	-1,829	-471	-804	-1,247	-1,455
West Suburban Cook	642,631	358,303	674,800	430,386	673,975	429,232	674,528	429,861	674,142	429,470	-825	-1,154	-272	-525	-658	-916
DeKalb	105,160	52,772	155,000	70,963	153,924	70,645	154,150	70,698	154,142	70,707	-1,076	-318	-850	-265	-858	-256
DuPage	916,924	689,770	1,022,108	851,700	1,020,250	849,256	1,021,605	850,676	1,020,626	849,758	-1,858	-2,444	-503	-1,024	-1,482	-1,942
Kane	515,266	255,778	953,423	509,567	945,596	505,597	949,665	507,611	947,178	506,412	-7,827	-3,970	-3,758	-1,956	-6,245	-3,155
Lake, Illinois	703,462	427,450	941,221	638,025	936,781	634,786	939,651	636,380	937,657	635,387	-4,440	-3,239	-1,570	-1,645	-3,564	-2,638
LaPorte, Indiana	111,474	54,402	123,229	67,830	123,339	67,951	123,372	67,995	123,229	67,830	110	121	143	165	0	0
LaSalle	113,924	52,676	125,686	64,414	125,510	64,307	125,662	64,459	125,535	64,303	-176	-107	-24	45	-151	-111
McHenry	308,760	134,274	692,028	321,495	685,778	319,044	690,333	320,593	687,041	319,546	-6,250	-2,451	-1,695	-902	-4,987	-1,949
Boone	54,165	19,849	86,973	31,499	86,203	31,282	86,538	31,373	86,359	31,325	-770	-217	-435	-126	-614	-174
Lee	36,031	15,381	37,548	20,150	37,543	20,148	37,540	20,145	37,545	20,149	-5	-2	-8	-5	-3	-1
Ogle	53,497	22,404	67,214	31,795	67,063	31,710	67,116	31,737	67,093	31,726	-151	-85	-98	-58	-121	-69
Winnebago	295,266	155,293	356,250	194,756	354,936	194,098	355,677	194,450	355,202	194,232	-1,314	-658	-573	-306	-1,048	-524
Study Region	10,024,760	5,663,347	13,044,166	7,633,014	13,044,044	7,633,049	13,044,169	7,633,231	13,044,246	7,633,089	-122	35	3	217	80	75